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# THE IRON TRADE REVIEW

**A Weekly Journal Devoted to the Machinery, Metal-Working and Foundry Trades, and Iron and Steel Manufacture.**

VOLUME XXXVII — CLEVELAND, OHIO, JULY 28, 1904 — NUMBER 30

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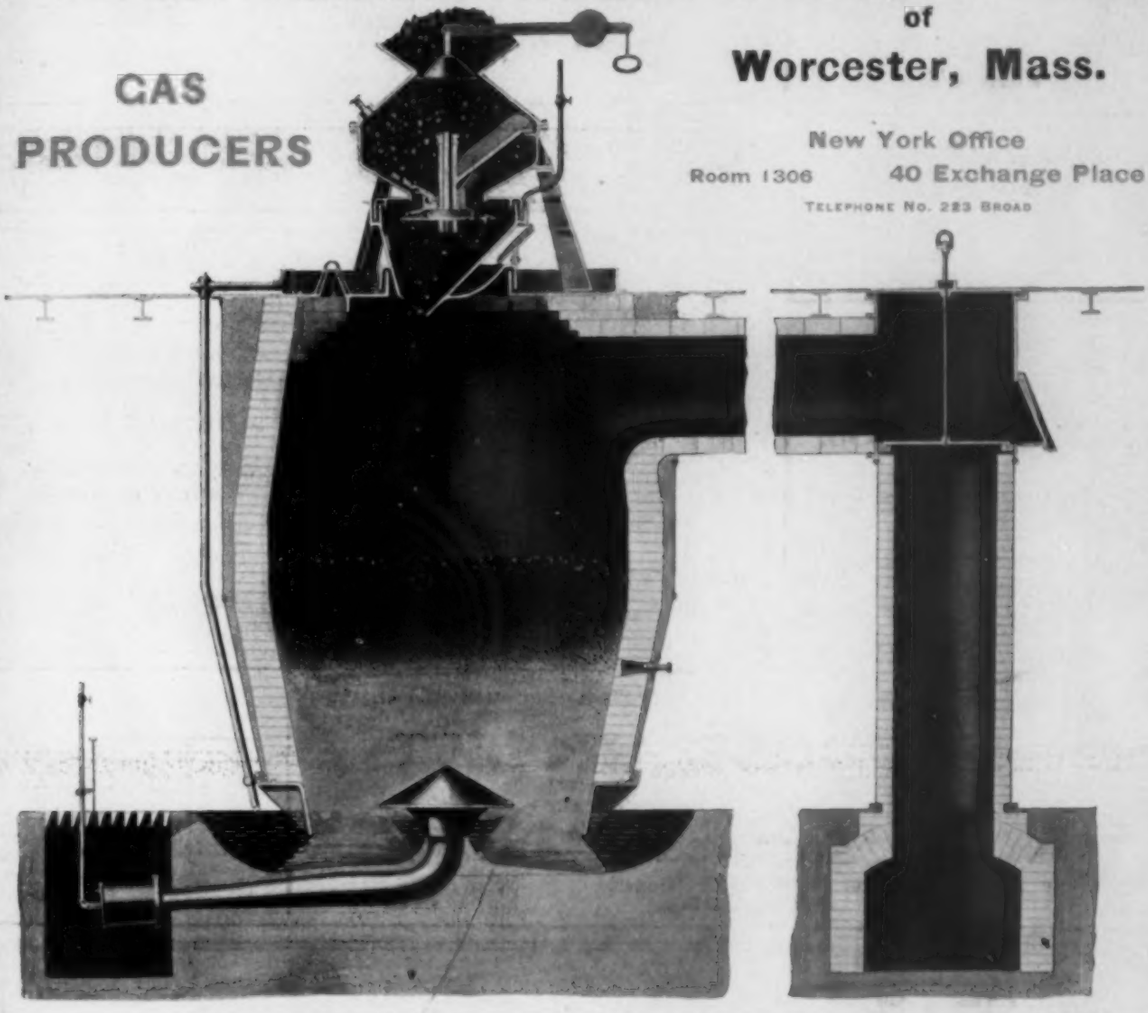

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# THE IRON TRADE REVIEW

VOLUME XXXVII CLEVELAND, OHIO, JULY 28, 1904 NUMBER 30

## THE WEEK IN IRON CIRCLES.

### THE MARKET AT LARGE.

A moderate increase in pig iron buying has been noticed in the past week but finished material markets have settled farther into mid-summer dullness and have so far refused to make good the repeated declarations of Wall Street authorities. Now that the steel corporation meeting has been held and the expected action taken in declaring the usual dividend on the preferred stock it may be that the iron market will be allowed for a time to work out its own destiny in the regular way.

Pig iron buying was to be looked for in July, since most consumers aimed to come out even at the end of June with their purchases for the first half, and if inquiries are an index of wants, there is some little business in prospect for August. Cincinnati has had a good share of the activity of the past week in foundry iron, a number of Indiana buyers taking round lots. The total is between 8,000 and 10,000 tons, to which are to be added several good orders placed by Cincinnati foundries, and a 4,000 ton contract finally entered into by an Ohio pipe concern, deliveries in the next four months. Sales of 15,000 to 20,000 tons of basic iron are also reported by Southern sellers. The quotation of $9.50 by Southern furnaces is now quite general but as with previous advances, business lessens when quotations move up. At present $9.25 for No. 2 seems to be minimum for Southern iron, but there is considerable variation in prices on Northern foundry iron, particularly in the East. Some furnaces have shown more anxiety to get business and have named low figures; others have advanced their quotations in the belief that the outlook justifies the refusal of prices that cut too close to cost. In the Central West $11.75 at furnace for No. 2 is still named. Foundries find no increased demand for castings. From 40 to 50 percent of the output of a year ago is the average with jobbing foundries and some are running with about one-third force. Under these conditions stocks of pig iron will not decline without a further blowing out of furnaces. Present indications are that the July production of pig iron will fall below that of February, though exceeding the total for January. The steel corporation will start up a few idle furnaces early in August, its supplies of pig iron having been reduced to small proportions.

Wage differences in the sheet and tin plate trades are now fully adjusted, the leading tin plate interest agreeing to cut in two the former wage concession on rebate plates. The bar mill scale hangs fire because of difficulty of getting arbitrators. But labor differences are not a factor in the present quietness in finished lines. The entire situation hinges on orders. Here and there mills are starting as specifications have reached sufficient volume to warrant resumption but there is no backlog of orders justifying any expectation of steady operation over a period of weeks. As the present accumulation of orders is taken care of there will be shut-downs as before.

The reports of rail orders circulated with such diligence last week are not confirmed, and estimates of tonnages various roads will need for next year are guesses which may or may not prove true. No price has been fixed for rails for 1905, and there is no immediate necessity for such action. Railroads have not yet departed from their policy of months of buying only what must be had for early consumption.

Structural material still gives a better report of itself than any finished line, but here prospective business is a large factor. Wire interests are preparing for a good fall trade, but competition promises to be keener, particularly in the West and Southwest.

### PITTSBURG.

#### Reduction in Tin Plate.

(Special Telegram.)

PITTSBURG, July 27.—The American Steel & Tin Plate Co. has made a reduction of 15 cents a box on tin plate, making the new price $3.30, f. o. b. mills, Pittsburg district. In addition to this reduction an extra 1 percent discount for time will be allowed, making practically a reduction of 20 cents per box. This is a departure from the 2 percent discount which has been in vogue for a number of years.

OFFICE OF *The Iron Trade Review*, }
429 PARK BUILDING, July 27. }

The buying of pig iron as well as finished material continues on a limited basis, the movement at the beginning of the third quarter of the year being much lighter than at the inception of the first and second quarters. The improvement heralded far and wide has not yet appeared on the books of the manufacturers in the shape of orders, and if conditions are really improving it will be some time before consumers reach the point where they will cover their requirements for any extended periods. While it is true that merchant furnace operators in the Mahoning and Shenango Valleys have advanced prices slightly, the amount of business taken in the past three weeks was not the cause of such action. The increased prices are asked in some cases because makers believe the outlook warrants something more than bare cost, and while asking prices are on a higher basis, business is actually done on a level almost as low as at the beginning of this month. Idle steel and iron producing capacity still continues large. At Youngstown the Bessemer plant of the Carnegie Steel Co. is off this week, while that operated by the Republic Iron & Steel Co. is only operated as orders come in. It has been idle more than half of July. The Bessemer plants at Ashland, Ky., Bellaire and Mingo Junction, O., as well as the American Steel & Wire Co.'s plants at Cleveland continue inoperative, although the last named are expected to resume shortly. The Carnegie Steel Co. has one steel mill idle at Sharon and the other plant is running very light. The Jones & Laughlin Steel Co. has one converter off. The Bessemer plant at Columbus, O., continues idle, while no date has yet been set for commencing operations at the new open-hearth plant at Donora.

In anticipation of the fall demand, the American Steel & Wire Co. is preparing to resume operations next week at nearly all its idle plants, which will include the resumption of the two idle steel works at Cleveland and at the Shoenberger works in this city, and the resumption of operations at the banked Shoenberger furnaces. One of the idle stacks of the Carrie plant of the Carnegie Steel Co. and another at the Edgar Thomson plant will also

go in next week, as well as a third stack at Youngstown, O. The Youngstown Steel Co., Youngstown, will also start up its idle furnace.

While slight improvement is noticed in the wire and wire nail trade, it does not warrant the resumption of plants but the expectation of the usual seasonable demand necessitates the preparation of a stock. Betterment is also noticed in structural material, buying of which has improved somewhat in all parts of the country. Nearly all of it is limited to small lots, however. Bars and plates show no improvement, and the former are not expected to improve before September when the implement plants are expected to resume. An increased demand for plates is not looked for this year.

The tin plate scales have been finally adjusted, the tin house workers accepting a reduction of 5 percent, while the concessions on rebate tin plate with the Amalgamated Association were cut in two. Instead of receiving a 25 percent concession in the wages on this plate the American Sheet & Tin Plate Co. will only receive 12½ percent in the future. Practically all of the independent sheet and tin plate manufacturers have already signed the Amalgamated scale and no trouble is looked for in these mills. Some trouble is found in the selection of a board of conciliation to adjust the bar iron scale with the Republic Iron & Steel Co. The latter already has chosen its representative, but all the association selections thus far have refused to serve. No agreement has yet been reached with the American Steel Hoop department of the Carnegie Steel Co., although conferences between the company officials and the men have been on for more than a week.

The Jones & Laughlin Steel Co. this week announced that it would carry out its plan, decided upon more than a year ago, of erecting four additional Talbot open-hearth steel furnaces, work already being under way. This will increase the company's annual steel production by 325,000 tons. The H. C. Frick Coke Co. has awarded contracts for the erection of 1,000 additional ovens in the Connellsville region. This is the first new work of any magnitude among steel manufacturers let in more than a year.

**Pig Iron.**—While inquiries continue heavy, less than one fourth of the iron asked for results in the placing of business. We note the sale of 2,500 tons of basic to an independent steel works in Ohio for delivery through September on the basis of $11.35 Valley furnace for the July allotment and $11.50 for August and September. We also note the sale of 100 tons of Bessemer which netted the furnace $11.70. An order for 1,000 tons of low phosphorus iron was placed at $17.75, Pittsburg, the previous sales having been made at $18.50. Northern foundry iron is not being offered below $11.65, Valley furnace and a few stacks are holding out for $12 at furnace or $12.85 Pittsburg. On forge iron $11.85 Pittsburg can be done. Southern iron, No. 2 foundry, is being held firmly at $9.25 to $9.50, Birmingham. The Wheeling Mold & Foundry Co. has not yet closed for its iron for the New York tunnel castings. There has been some figuring on warrants in this connection. The contracts for the iron for the other tunnel castings have not yet been placed. The competition among the furnaces to secure this business is reported as keen and some low prices, despite the extended delivery, are looked for. We revise quotations as follows:

| | |
|---|---|
| Bessemer, Valley | $11 75 to 12 00 |
| Bessemer, Pittsburg | 12 60 to 12 85 |
| No. 1 Foundry | 12 75 to 13 00 |
| No. 2 Foundry | 12 35 to 12 60 |
| Gray forge, Pittsburg | 11 85 to 12 00 |
| Chilled basic, Valley | 11 35 to 11 50 |
| Chilled basic, Pittsburg | 12 20 to 12 35 |

**Steel.**—The market continues quiet and agreed prices continue to be shaded from $1.50 to $2 per ton. Demand for wire rods is improving and there is some buying at slightly lower prices. Agreed quotations are as follows: Bessemer and open-hearth billets, 4 x 4 inches, and slabs up to and including 0.25 carbon, $23 Pittsburg, Wheeling, Valley, Johnstown, Ashland, Ky., Ironton, O., and Lorain, O., 0.26 and including 0.60 carbon, $1 advance; and 0.61 to 1.00 carbon $2 advance. Billets smaller than 3⅞ inches and sheets and tin bars are $1 per ton extra. Bessemer and open-hearth rods are quoted at $28 to 28.50 Pittsburg.

**Ferro-Manganese.**—There is little demand, but low prices continue to be made on occasional carload lots. English ferro is offered delivered at $40.50 and sales of domestic are being made to meet this competition.

**Muck Bar.**—Prime neutral bars are held nominally at $24, f. o. b. mill, Pittsburg. There is practically no buying.

**Skelp.**—There is little new buying of skelp and the market remains nominally 1.35c for both grooved and sheared steel, while iron is firm at 1.40c for grooved and 1.45c to 1.50c for sheared.

**Rails and Track Material.**—Exceedingly low prices continue to be made on light section rails. Practically all sections from 16 to 40 pounds to the yard can be had at $21, Pittsburg, despite the fact that standard sections are selling at $28. Two of the light rail mills are adding equipment to their plants for the rolling of small shapes and bars. We revise quotations as follows: Standard sections, 50 pounds and over, in lots of 500 tons and over, $28; car lots and less than 500 tons, $30; less than car lots $32; light rails, 16 to 40 pounds, $21. Track material, spikes, 1.60c to 1.65c.

**Plates.**—The plate market shows no improvement, and no great change is now looked for the remainder of the year. Most of the mills are operating at greatly reduced capacity and one of the Homestead mills which operated double turn last week is on single turn again. We make the following quotations: Tank plates ¼ inch thick and up to 100 inches in width 1.60c at mill Pittsburg; flange and boiler steel, 1.70c marine, ordinary firebox, A. B. M. A. specifications, 1.80c; still bottom steel, 1.85c; locomotive firebox, not less than 2.10c; and it ranges in price to 3c. Plates, more than 10 inches, 5c extra 100 pounds. Plates 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra. These quotations are based on carload lots with 5c extra a hundred pounds for less than carload lots. Terms, net cash in 30 days.

**Bars.**—Demand for iron and steel bars continues light and the mills are not receiving heavy orders on specifications. With the resumption of the agricultural implement plants in the fall a revival of the demand for bars is looked for, but nothing out of the ordinary is expected during August. We make the following quotations: Bar iron, 1.25c to 1.30c Pittsburg for local delivery, while for Western shipments quotations are based on 1.25c to 1.35c Pittsburg. Hoops are held at 1.55c base, and bands at 1.35c taking bar extras. Bessemer steel bars, 1.35c; open-hearth, 1.40c; plow beams and cultivator beams, 1.35c net; channels, angles, zees and tees, Bessemer, under 3 inches, 1.45c. The following differentials are maintained on steel: Less than 2,000 pounds of a size, not less than 1,000 pounds, 10 cents advance; less than 1,000 pounds of a size, 30 cents advance.

**Structural Material.**—Demand for structural shapes has improved considerably, orders being received from all sections of the country. The buying is largely limited to small lots, however, no large work having been closed the past week. We make the following quotations: Beams and channels, 3 to 15 inches, 1.60c; 18 to 24 inches, 1.70c; tees, 1.65c; zees, 1.60c; angles, from 3 to 16 inches, 1.60c; universal mill plates, 1.60c.

**Sheets.**—The market continues quiet, and 2.10c is the minimum on 28 gauge, black. Black sheets in carload lots, one pass, are held as follows: No. 8, 1.60c; No. 9, 1.65c; Nos. 12 to 14, 1.70c; Nos. 15-17, 1.75c to 1.80c; Nos. 18-21, 1.85c to 1.90c; Nos. 22-24, 1.95c; Nos. 25-26, 2c; No. 27, 2.05c; No. 28, 2.10c to 2.15c; No. 29, 2.35c to 2.40c; No. 30, 2.50c to 2.55c. Galvanized: Nos. 12-17, 2.20c to 2.25c; Nos. 18-21, 2.35c to 2.40c; Nos. 22-24, 2.50c to 2.55c; Nos. 25-26, 2.65c to 2.70c; No. 27, 2.90c; No. 28, 3.10c; No. 29, 3.45c to 3.50c; No. 30, 3.85c to 3.90c.

**Wire and Wire Nails.**—Anticipating a heavy fall trade, the wire and nail mills are already resuming operations. As yet no very large orders have been placed, but as jobbers' stocks are known to be light all over the country the buying when commenced, is expected to be heavy. We make the following quotations: Wire nails, carload lots to jobbers f. o.

b. cars Pittsburg, are quoted $1.90 base; plain wire, carload lots, $1.80 base; barb wire, carload lots, $2.20 base; staples, carload lots, $2.05 keg. Galvanized 30 cents extra. Carload lots to retailers are held at 5 cents advance in all lines, and on less than carload lots a further advance of 10 cents is charged. Steel and iron cut nails, carload lots, $1.75, and less than carload lots, $1.80 f. o. b. Pittsburg, plus freight to point of destination. Terms, 60 days, less 2 percent off in 10 days.

**Pipes and Tubes.**—There is less cutting on merchant pipe than for some time, few of the mills now being willing to make concessions from the low prices which are ruling. Discounts to consumers, carload lots f. o. b. Pittsburg, plus freight to destination according to Tube Rate Book, are as follows:

MERCHANT PIPE.

| | Steel. | | Iron. | |
|---|---|---|---|---|
| | Black. | Galv. | Black. | Galv. |
| ⅛, ¼ and ⅜ inch | 70 | 55 | 69 | 54 |
| ½ inch | 73 | 63 | 72 | 62 |
| ¾ to 3 inches | 78½ | 68½ | 77½ | 67½ |
| 3½ to 6 inches | 77 | 67 | 76 | 66 |
| 7 to 12 inches | 72½ | 57 | 71½ | 56 |
| Extra strong plain ends, ⅛ to 8 inches | 69 | 59 | 68 | 58 |
| Double extra strong, ½ to 8 inches | 60 | 50 | 56 | 46 |

MERCHANT BOILER TUBES, LESS CARLOADS, 22 FEET AND UNDER.

| | Steel. | Iron. |
|---|---|---|
| 1 to 1½ inch | 48 | 43 |
| 1¾ to 2¼ inches | 60 | 45 |
| 2½ inches | 62 | 48 |
| 2¾ to 5 inches | 68 | 55 |
| 6 to 13 inches | 60 | 43 |

**Merchant Steel.**—At the meeting of the shafting association held last week prices were reaffirmed. Demand is light and none of the mills are operating at their full capacity. We make the following quotations: Toe calk, 1.90c; carriage spring steel, 1.75c; tire steel, 1.55c to 1.60c; plow steel, 6 inches and under, 1.35c for Bessemer and open-hearth; plow slabs, ¾ inch and heavier, 1.60c. The demand for shafting on the part of the machinery manufacturers is not heavy, and tonnage has therefore been considerably affected. Drawn and cold rolled shafting is held at 52 percent off in carload lots and 47 off in less than carload lots.

**Old Material.**—Heavy melting stock has strengthened considerably and on small lots for immediate delivery no better than $11 Pittsburg can be done. Most of the material is now in the hands of the dealers who are holding for higher prices, while the railroads are not making heavy offerings at ruling quotations. Re-rolling rails are held at $13.

**Coke.**—In the upper and lower districts of the Connellsville region upwards of 10,500 ovens continue idle. Until prices advance there is little indication of these idle plants resuming, as coke is now selling at prices below cost at many plants. The H. C. Frick Coke Co. awarded contracts this week for the erection of 1,000 coke ovens in the upper region, to be located on undeveloped coal property. Furnace coke, strictly high grade, is selling at $1.35 for delivery during the next three months, while for the last quarter $1.40 is asked. On foundry coke better prices are ruling, strictly high grade coke being held at $1.80 to $1.85, while a few producers are receiving over $2 for their product. During the week ending Saturday, July 16, the production of the upper region reached 158,612 tons and the output of the lower region amounted to 51,940 tons.

## CHICAGO.

OFFICE OF *The Iron Trade Review*,
1164 MONADNOCK BLOCK, July 26.

With the exception of a brisk demand for pig iron, the local market is not in an active condition. Contracts for good tonnage of Northern iron were let during the week and there was also a good volume of buying from Southern furnaces on the basis of $9.25 Birmingham for No. 2 foundry. Finished material is only in moderate demand. The quietness is attributed in a large measure to the midsummer dullness, which has settled over nearly all lines. The market, however, has a good undertone, with many features indicative of more active business as soon as the active season commences, though much depends on the crop yield and the excitement over the presidential campaign. One of these features is the strike among the miners in the South which will enable furnaces with stocks on hand to reduce these before the fall campaign commences; while the recent curtailment of production in bar iron, sheets, etc., will result in a clearing up of stocks of these products in the hands of consumers. Southern furnaces are offering no more No. 2 iron at $9 Birmingham, the minimum price being 25 cents higher.

Bar iron is firm at 1.35c Chicago, and in sheets there is less cutting of prices than has been noted in several weeks. There is no demand for billets in this market, though quotations $1 to $2 a ton below official prices are heard of. Structural steel business is quiet, and the transactions pending are slow in coming to a head. About 35,000 tons is being figured on, the greater portion of which it is expected will be let this fall. Wire products are slow, and the leading producer continues to shade its prices on desirable business. Plates are fairly active, the local mill managing to run about five days each week. Both merchant and cast iron pipe, as well as boiler tubes, are quiet. Specifications for steel bars continue in good volume, the only weak spot being hard angles, prices on which are being shaded by some mills. Few transactions are noted in the scrap market, both dealers and railroads holding their material for better prices than prevailing. Coke is without change, being in little demand.

The Inland Steel Co. started up in all departments at its Indiana Harbor plant on Monday except the sheet mill, and this will be kept closed until the Amalgamated Association offers the company a scale under which it can operate at a profit. The orders for sheets at present on the books of the company which cannot be filled from stock will be transferred to other mills or canceled.

**Pig Iron.**—Considerable new business has been placed. The minimum quotation of Northern furnaces in the past week for No. 2 iron has been $13.25 Chicago, and of Southern furnaces, $12.90 Chicago. Not all the transactions were on this basis, however, as a number of both Northern and Southern interests are asking 25 cents a ton higher than these prices. The local pig iron market is firmer and more active than it has been in weeks, and the waiting mood of foundrymen is not near so conspicuous as it was. Instead, there is a healthy desire to buy as far ahead as furnaces will permit, which generally is for the period ending Dec. 31. The malleable interests have been buying freely of malleable iron during the week, and furnaces report having taken on a good sized tonnage since the date of our last report. Our quotations are without change, as follows:

| | |
|---|---|
| Lake Superior Charcoal | $14 50 to 15 00 |
| Northern Coke Foundry No. 1 | 13 75 to 14 00 |
| Northern Coke Foundry No. 2 | 13 25 to 13 50 |
| Northern Coke Foundry No. 3 | 13 75 to 13 00 |
| Northern Scotch Foundry | 14 50 to 15 00 |
| Ohio Strong Softeners No. 1 | 14 50 to 15 00 |
| Ohio Strong Softeners No. 2 | 14 00 to 14 50 |
| Southern Coke Foundry No. 1 | 13 40 to 13 65 |
| Southern Coke Foundry No. 2 | 12 90 to 13 15 |
| Southern Coke Foundry No. 3 | 12 65 to 12 90 |
| Southern Coke Foundry No. 4 | 12 40 to 12 65 |
| Southern No. 1 Soft | 13 40 to 13 65 |
| Southern No. 2 Soft | 12 90 to 13 15 |
| Southern Gray Forge | 12 15 to 12 40 |
| Southern Mottled | 12 15 to 12 40 |
| Southern Silveries (4% to 6% Silicon) | 14 85 to 15 85 |
| Jackson Co. Silveries (8% to 10% Silicon) | 17 80 to 18 30 |
| Alabama and Georgia Car Wheel | 18 85 to 19 35 |
| Malleable Bessemer | 13 50 to 14 00 |
| Alabama Basic | 12 15 to 13 40 |

**Billets.**—The market is about as dead as it can be, despite the offers of some independent mills which are willing to shade association prices. Regular quotations for Bessemer and open hearth billets, 4 x 4 and larger up to .25 carbon, are $24; up to and including .60 carborn, $1 extra; over .60 carbon, $2 extra. Billets, 3⅞ in. and smaller, and sheet and tin bars, $25. Open hearth billets from store, $1.30 per 100 lbs.

**Iron and Steel Bars.**—There is little change to be noted in the local situation. There is a lack of uniformity in the prices of the various bar iron producers selling in this market, some stating that on desirable business 1.30c might be done, while others say their absolute minimum is 1.35c, and others 1.40c. It cannot be denied that the market is stronger than it has been, and advances are probable .. the crop returns are as large as reports indicate they will be. Some good inquiries from railroads

and carbuilders are out, and it is expected that some of these will be placed in the near future. Specifications for steel bars are coming in freely and a little new business is being booked right along on the basis of 1.51½c Chicago. This quotation applies only to mills in the association, outside interests asking as low as 1.40c Chicago. Hard steel angles are weak, a local mill offering same on the basis of 1.30c Chicago. Soft steel angles, 3 x 3 and smaller, are firm at the association price, 1.61½c Chicago, as also are hoops at 1.71½c. Store business is active, a considerable tonnage being deflected to these interests on account of the idleness of many mills in this vicinity. We quote store prices, as follows: Iron bars, 1.75c base, full extras; steel bars, 1.70c to 1.80c base, half extras; hoops, 2c to 2.10c rates, full extras.

**Sheets.**—The Inland Steel Co. has started up in all departments of its plant at Indiana Harbor, except the sheet mill, and officials of the company state this will be kept shut down until the Amalgamated association offers a scale under which the mill can operate at a profit. Demand for sheets has improved in a general way, and prices are somewhat firmer than they have been. We quote as follows: For one pass, cold rolled, blue annealed sheets, mill shipments, Chicago delivery, Nos. 9 and 10, 1.77½c to 1.79½c; Nos. 11 and 12, 1.79½c to 1.80½c; Nos. 13 and 14, 1.86½c to 1.91½c; Nos. 15 and 16, 1.89½c to 2.01½c. On box annealed, one pass, cold rolled: Nos. 18 and 20, 2.01½c to 2.06½c; Nos. 22 and 24, 2.06½c to 2.11½c; Nos. 25 and 26, 2.11½c to 2.16½c; No. 27, 2.16½c to 2.21½c; No. 28, 2.26½c to 2.31½c; No. 29, 2.41½c to 2.46½c; No. 30, 2.51½c to 2.56½c. Jobbers report a fair demand for both black and galvanized sheets from stock. Prices are without change, and we quote as follows: No. 10 and heavier, 2c to 2.10c; No. 12, 2.05c to 2.15c; No. 14, 2.10c to 2.20c; No. 16, 2.20c to 2.30c; No. 18, 2.30c to 2.40c; No. 20, 2.30c to 2.40c; No. 22, 2.35c to 2.45c; No. 24, 2.40c to 2.50c; No. 26, 2.50c to 2.60c; No. 27, 2.60c to 2.70c; No. 28, 2.70c to 2.80c; No. 29, 2.85c to 2.95c. Galvanized sheets are quiet, and we quote Pittsburg discounts, f. o. b. mill, 80 and 5 to 80 and 10. For shipments from local store, 75, 10 and 5 to 80 percent.

**Structural Steel.**—The week has been a quiet one with structural mills. Some new business has been closed and a fair tonnage in specifications has been asked for, but the aggregate amount is not enough to excite comment. Several contracts aggregating 35,000 tons pending, included in which is the 25,000 tons wanted by the South Side Elevator Railroad Co. for its projected extensions, contracts for all of which are expected to be closed this fall. Prices are without change, and we quote carload lots, mill shipments, Chicago delivery, as follows: Beams and channels, 16 inches and under, 1.76½c; 18 inches and over, 1.86½c; universal plates, 1.76½c; angles, 3 x 3 and larger, 1.81½c; zees, 1.76½c. On lots from store, we quote beams, channels and angles, 3 x 3 and larger, 2c; beams, 18, 20 and 24-inch, 10c extra; tees, 2.05c rates.

**Plates.**—A little new business is placed each day with mills, though the demand, comparatively speaking, is of light proportions. The South Chicago mill, however, manages to operate about five days each week on the specifications and orders that come forward from day to day. Independent mills rolling plates 60 inches wide and narrower, are offering these at a reduction of $2 a ton below association prices. In other respects, the "official" schedule is being maintained in this market, and we quote carloads lots, mill shipments, Chicago delivery, as follows: Tank steel, ¼ inch and heavier 1.76½c; flange steel, 1.86¼c; marine, 1.90½c; universal mill plate, 1.76½c to 1.81½c; 3-16-inch, 1.86½c; Nos. 7 and 8, 1.91½c; No. 9, 2.10½c; No. 10, 1.91½c; No. 11, 1.96½c; No. 12, 2.01½c. From store, we quote tank steel, ¼-inch and heavier, 2c; 3-16, 2.10c; No. 8, 2.15c; No. 10, 2.15c; flange steel, 2.25c, all f. o. b. warehouse.

**Rails and Track Supplies.**—No additional details are to be obtained regarding the orders for rails said to have come from the C. & G. W., C. & N. W. and Illinois Central railways to the Carnegie and Illinois Steel Companies. Local officials of both companies deny that any new orders from these railroads have been received to date, saying that all three roads contract for their requirements once a year and specify on the same from time to time as their needs dictate. These statements do not necessarily imply, however, that the orders may not be forthcoming in the near future. A number of small contracts for standard rails have been let during the week, most of which came from electrical railroads. Light rails and track supplies are in good demand. Prices are without change, and we quote heavy sections, mill shipments, 500 tons and over, $28; les than 500 tons to carload lots, $30; less than carload lots, $32; second quality rails, $27; light rails, $23 to $25; track supplies, f. o. b. Joliet mill; angle bars, 1.35c to 1.45c; spikes, first quality, 1.65c to 1.75c; track bolts, 3½ x ¾, with square nuts, 2.20c to 2.30c per 100 lb.; with hexagon nuts, 2.35c to 2.45c.

**Merchant Pipe.**—Business has been quiet during the week and little improvement is expected until the approach of colder weather. Prices which are without change are being maintained. We quote carload lots, mill shipments, random lengths, f. o. b. Chicago, as follows:

MERCHANT PIPE.

| | Steel Pipe. Black. Percent. | Steel Pipe. Galv. Percent. | Guaranteed Wrought Iron Pipe. Black. Percent. | Guaranteed Wrought Iron Pipe. Galv. Percent. |
|---|---|---|---|---|
| ⅛ to ¼ inch | 68.35 | 53.35 | 67.35 | 52.35 |
| ⅜ inch | 71.35 | 61.35 | 70.35 | 60.35 |
| ½ to 3 inches | 76.85 | 66.85 | 75.85 | 65.85 |
| 3½ to 6 inches | 75.35 | 65.35 | 74.35 | 64.35 |
| 7 to 12 inches | 70.85 | 55.35 | 69.85 | 54.35 |

**Boiler Tubes.**—New business is only of fair proportions. Prices are without change, and we quote carload lots, mill shipments, Chicago delivery, as follows:

BOILER TUBES.

| | L. W. Steel. Percent. | C. C. Iron. Percent. | Seamless Steel. Percent. |
|---|---|---|---|
| 1 to 1½ inch | 46.35 | 41.35 | 52.35 |
| 1¾ to 2¼ inch | 58.35 | 41.35 | 40.35 |
| 2½ inch | 60.35 | 46.35 | 43.35 |
| 2¾ inch to 5 inch | 66.35 | 53.35 | Up to 4 inches. |
| 6 to 18 inch | 58.35 | 41.35 | 50.85 |

The following are the agreed discounts from store, Chicago:

| | Steel. | Iron. | Seamless Steel. |
|---|---|---|---|
| 1 to 1½ inches | 42½ | 37½ | 40 |
| 1¾ to 2½ inches | 52½ | 35 | 37½ |
| 2½ inches | 55 | 37½ | 40 |
| 2¾ to 5 inches | 62½ | 47½ | 47½ |
| 6 inches and larger | 52½ | 35 | .. |

**Merchant Steel.**—The demand for products listed under this heading is not of a very active nature. Prices, however, are firm. We quote carload lots, mill shipments, Chicago delivery, as follows: Spring steel, 1.90c; sleigh shoe, flat sizes, 1.56½c; concave and convex, 1.76½c; cutter shoe, 2.25c; smooth finished machinery steel, 1.76½c base; smooth finished tire, 1.71½c; plow steel, 2.20c and upward, according to quality; toe calk, 2.06½c base. Ordinary grades of crucible tool steel, 6½c to 8c; special tool steel, 12c up. Cold rolled shafting, 52 percent from list in carload lots, and 47 percent discount in less than carload lots.

**Cast Iron Pipe.**—Producers report that orders, generally speaking, are slack, though some fair sized tonnages have been closed within the past week. We quote 4-inch water pipe, $25.50; 6-inch to 12-inch, $24.50; larger sizes, $24; gas pipe, $1 a ton higher.

**Wire Products.**—Concessions from the regular schedule amounting to $1 a ton are being made by producers on nearly all products. Cut nails have also been reduced and are now selling from $1.50 to $2 a ton below previous prices. New business is light. We continue to quote the old schedule, no official change in it having been announced. Carload lots to jobbers, Chicago delivery, as follows: Wire nails, carload lots, $2.10; less than carload lots, $2.15; cut nails, carload lots, 1.80c to 1.85c; less than carload lots, 1.96½c; smooth wire, carloads, $2, and $2.05 for less than carload lots; galvanized smooth wire, $2.30 in carloads and $2.35 in lesser amounts; painted barb wire, $2.40 carloads, and $2.45 in less than carload lots; galvanized barb wire, $2.70 carloads, and $2.75 less than carload lots. Staples, polished, carloads, $2.25; less than carload lots, $2.30; galvanized, $2.55 carloads and $2.60 less than carload lots. Bale ties, 82½ and 5 percent discount f. o. b. Waukegan, Ill., on straight carload lots. Poultry netting, 85 and 5 percent discount from list f. o. b. Joliet or DeKalb, with actual freight allowed not exceeding 50 cents per 100 pounds.

**Foundry Coke.**—There is only a nominal demand felt in this market for coke. Standard 72-hour Connellsville and Southern grades are selling at from $1.90 to $2 at the ovens,

making the Chicago price of the former from $4.55 to $4.65, and of the latter from $4.30 to $4.40.

**Old Material.**—The sentiment of the market is one of increasing strength. Railroads and dealers are holding on to their material in anticipation of higher prices being realized when the fall buying movement commences. At the present time, trading is dull, transactions being limited entirely to the sale of special lots. We have reduced our quotations on old wheels 50 cents, and advanced No. 1 R. R. wrought 50 cents, but with these two exceptions our last week's quotations are without change. We quote dealers' selling prices, gross tons, as follows:

| | |
|---|---|
| Old iron rails | $14 50 to 15 00 |
| Old steel rails (4 feet and over) | 11 00 to 11 50 |
| Old steel rails (less than 4 feet) | 10 00 to 10 50 |
| Relaying rails, subject to inspection | 22 50 to 23 00 |
| Relaying rails for sidetracks | 18 00 to 20 00 |
| Old wheels | 11 00 to 11 50 |
| Heavy melting steel | 9 50 to 10 00 |
| Mixed country steel | 7 00 to 7 50 |

The following quotations are for net tons:

| | |
|---|---|
| Low phosphorus scrap (.04 and under) | $12 00 to 13 00 |
| No. 1 R. R. wrought | 11 00 to 11 50 |
| No. 2 R. R. wrought | 9 50 to 10 00 |
| Shafting | 12 50 to 13 00 |
| Dealers' Forge, No. 1 | 8 00 to 8 50 |
| Wrought pipe and flues | 7 50 to 8 00 |
| No. 1 cast, 150 lb. and less | 9 25 to 10 00 |
| Heavy cast | 7 75 to 8 25 |
| No. 1 mill | 6 00 to 6 50 |
| Country sheet | 5 00 to 5 50 |
| No. 1 boilers, cut | 7 50 to 8 00 |
| Boiler punchings | 9 00 to 9 50 |
| Iron car axles | 15 00 to 15 50 |
| Steel car axles | 13 50 to 14 00 |
| Iron axle turnings | 7 00 to 7 50 |
| Steel axle turnings | 7 00 to 7 50 |
| Cast borings | 3 00 to 3 50 |
| Mixed borings, etc. | 3 00 to 3 50 |
| Wrought turnings | 6 00 to 6 50 |
| Machine shop turnings | 6 00 to 6 50 |
| Railroad malleable | 8 25 to 8 75 |
| Agricultural malleable | 7 75 to 8 00 |
| Stove plate and light cast scrap | 7 25 to 7 75 |
| Old iron splice bars | 12 00 to 12 50 |

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L. I. Bregman & Co., Cleveland, dealers in scrap, have opened a branch office at 652 Railway Exchange, Chicago, with L. Turivas in charge.

The business of the S. D. Kimbark Co., 80-84 Michigan avenue, Chicago, iron and steel jobbers and dealers in heavy hardware, was purchased July 19 by Kelley, Maus & Co., Chicago, the consideration not being made public. Four months ago, the company went through bankruptcy, and up to the day prior to the sale of its business was in the hands of the receiver. The transfer signalizes the retirement from business of one of the oldest heavy hardware houses in Chicago, the concern having taken the name of Mr. Kimbark in 1878, although he was connected with the company for many years prior to that time. Mr. Kimbark's two sons, Charles A. and Walter, have been associated with him in recent years as partners.

W. K. Kenly, formerly of Templeton, Kenly & Co., has started in business for himself under the name of W. A. Kenly & Co., with offices at 543 The Rookery, Chicago. The company will buy and sell new light section rails, heavy section relayers, track supplies of every description and kindred materials. A good sized stock of each line will be kept in the company's warehouse, which will enable it to give prompt deliveries at all times.

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## CLEVELAND.

OFFICE OF *The Iron Trade Review*, }
1064 ROSE BUILDING, July 27. }

**Iron Ore.**—The ore shipments from upper lake ports for July will probably equal those for July, 1903, which were 3,425,810 tons. Owing to the fact that the railroads are not as busy as they were last year with other kinds of freight, ore is being unloaded and sent to furnaces rapidly. Freight rates are unchanged at 70 cents from the head of the lakes, 60 from Marquette and 50 from Escanaba, and there are more vessels than cargoes. The ore market continues very quiet, but it is recognized that the time is rapidly approaching when furnaces will be compelled to contract. Prices for Bessemer are from $3 to $3.25 for old range and $2.80 to $3 for Mesabi, and for non-Bessemer quotations range from $2.50 to $2.70 for old range and $2.25 to $2.40 for Mesabi. Since the abandoning of the plan of fixing prices with a suppositious ore as a base, each ore commands a price determined by its fineness and its popularity with the trade.

**Pig Iron.**—Many buyers are apparently convinced that prices will not decline further and are inquiring and buying more freely for the remainder of the year. One Northern Ohio company is in the market for 2,500 tons, of which about 1,000 tons is for Southern iron. The hand to mouth policy is being gradually abandoned, even by concerns whose orders for their products are light. Willingness to buy more than immediate requirements indicates confidence that business will improve. Orders for pig iron for castings for the East River, Pennsylvania tunnel have not yet been placed, but it is expected that they will be this week. While business shows some improvement in volume, prices have changed very little but are firmer. While No. 2 Northern foundry can still be bought at $11.75 at the furnace, the number of sellers who demand $12 is larger and sales have been made at that figure. Cleveland furnaces are selling at $12.25 to $12.50 for local consumption. Southern iron is firm at the prices of last week, $9.25 to $9.50. While sales at present are not large, the tonnage disposed of during the month drawing to a close was considerable. Lake Superior charcoal is weaker, having been sold at lower lake ports at $14. We quote as follows for Cleveland delivery:

| | |
|---|---|
| Bessemer | $12 60 to 12 75 |
| No. 1 Strong Foundry | 12 75 to 13 00 |
| No. 2 Strong Foundry | 12 60 to 12 85 |
| No. 3 Foundry | 12 25 to 12 50 |
| No. 2 Southern | 12 10 to 12 35 |
| Gray Forge | 12 15 to 12 25 |
| Gray Forge, Southern | 12 00 to 12 15 |
| Lake Superior charcoal | 14 00 to 14 25 |

**Finished Material.**—There is some improvement in structural material, but, on the whole, the demand for finished lines shows little change. Reports of concessions are not, however, so often heard. Inquiry for bar iron has improved to such an extent that some of the idle mills will probably resume August 1 or soon thereafter. The usual quotation is 1.30c Pittsburg, or 1.39½c Cleveland. A considerable tonnage of steel bars was sold the latter part of last week at the prevailing price, 1.44½c Cleveland, for Bessemer, and 1.49½c for open-hearth. Competition in sheets continues and the business being done is light. We quote as follows: Cleveland delivery, the freight from Pittsburg being 9½ cents: Mill sales of black sheets in carload lots, No. 10, 1.74½c; No. 11-12, 1.79½c; No. 14, 1.84½c; No. 16, 1.94½c; No. 27, 2.19½c; No. 28, 2.29½c. Galvanized, mill sales, No. 14, 2.29½c; No. 16, 2.39½c; No. 18-20, 2.54½c; No. 22-24, 2.69½c; No. 25-26, 2.89½c; No. 27, 3.09½c; No. 28, 3.29½c. Black sheets out of stock: ¼ in., 1.90c; 3-16 in., 2.c. Blue annealed: No. 10, 2.05c; No. 12, 2.10c; No. 14, 2.15c; No. 16, 2.25c. One pass cold rolled: Nos. 18-20, 2.35c; No. 22-24, 2.40c; No. 26, 2.45c; No. 27, 2.50c; No. 28, 2.60c; No. 30, 3c. Galvanized out of stock: ¼ in., 1.90c; 3-16 in., 2c. Blue annealed: No. 10, stock: No. 16, 2.60c; No. 18-20, 2.70c; No. 22-24, 2.85c; No. 26, 3.05c; No. 27, 3.25c; No. 28, 3.45c; No. 30, 4.25c.

**Old Material.**—Mills are manifesting a disposition to place orders for future delivery at present prices, but stocks are now held largely by dealers who bought for speculative purposes and are holding in the belief that prices will advance. There is a slight upward tendency on a few articles, especially malleable iron, heavy steel, busheling and stove plate. We quote as follows, gross tons:

| | |
|---|---|
| Old iron rails | $14 50 to 15 00 |
| Old steel rails (over 6 feet) | 12 00 to 13 00 |
| Old steel rails (under 6 feet) | 11 00 to 12 00 |
| Old car wheels | 10 00 to 11 00 |
| Steel boiler plate | 9 00 to 10 00 |
| Malleable iron (railroad) | 9 50 to 10 00 |
| Malleable iron (agricultural) | 8 00 to 9 00 |
| Heavy steel | 9 50 to 10 50 |

We quote as follows, net tons:

| | |
|---|---|
| No. 1 R. R. wrought | $10 00 to 11 00 |
| No. 1 busheling | 9 00 to 9 50 |
| No. 1 machine cast | 9 50 to 10 50 |
| Iron axles | 15 00 to 16 00 |
| Axle turnings | 7 00 to 8 00 |
| Wrought turnings (free from cast) | 6 00 to 6 50 |
| Grate bars | 7 00 to 8 00 |
| Pipes and flues | 8 00 to 8 50 |
| Tank iron | 7 50 to 8 50 |
| Hoop and band iron | 5 00 to 5 50 |
| Sheet iron | 4 00 to 5 00 |
| Wrought drillings | 6 00 to 6 50 |
| Stove plate | 7 50 to 8 00 |
| Steel axles | 13 00 to 14 00 |
| Cast borings | 3 50 to 4 00 |

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## CINCINNATI.

July 26.

The coke market continues quiet. Some furnace cokes in the Virginia district are held a shade higher than a

week ago. In foundry coke best Connellsville brands are still quoted at $2 per ton f. o. b. ovens.

**Pig Iron.**—The advance in Southern iron to $9.25 Birmingham basis has been sustained and there is practically nothing now obtainable below that price. Birmingham irons, speaking strictly for the Birmingham district, are held at $9.50 for No. 2 foundry. The equivalent of $9.25 Birmingham is named by furnaces having freight rate advantages which enable them to realize $9.50 at the furnace or more. As in all such advances a few straggling lots were sold last week at $9 Birmingham, but these sales were generally on old quotations and pending business or some irons that seldom bring standard prices. A number of orders have been closed during the week, some of which were taken at $9.25, and a few closed early last week were on the $9 basis. Among these transactions were 2,100 tons to an Indianapolis foundry, and 1,500 tons to an engine builder at the same point. Seven hundred tons went to a Terre Haute foundry. One thousand tons sold to a Columbus, Indiana, manufacturer. Six hundred tons to Evansville, Indiana. Six hundred tons to Louisville, Ky. The Ohio pipe manufacturer who has had an inquiry in the market for some time, closed for 4,000 tons, for August, September, October, and November delivery. Several local foundries are in the market, and one foundry took 1,000 tons, another 800 tons, and another something over 1,000 tons. Most of these sales were for the next three months' delivery. Sales of basic iron aggegating 15,000 to 20,000 tons are reported. A manufacturer at Mishawaka, Ind., bought 1,000 tons of foundry iron, and a large manufacturer of heaters took 1,000 tons late in the week. These numerous sales about dispose of the inquiries and close up most of the pending business. The large tonnage wanted at Wheeling, W. Va., is still open, and it is believed that the buyers will be forced to change their specifications, as the analysis required under the inquiry limits the bidding. The only other large order pending is an inquiry from Mansfield, O., for 1,200 tons of Northern iron, and 1,000 tons of Southern, for delivery in the last half of the year. The general condition of the market remains about the same as last week. Southern furnace interests show no disposition to recede from the position taken a week ago, and are maintaining the advance in the asking price. Strike conditions in the Birmingham district still prevail and the situation is without change, with the possible exception that the cheap furnace coke which was sold at the beginning of the trouble from Virginia ovens, is now held slightly higher, and it is estimated that to buy this coke and use it for making iron in the Birmingham district, would increase the cost of making pig iron from 50c to 75c per ton over the cost of using local coke under normal conditions. Southern producers are apparently making no effort to sell pig iron. On the other hand, the Northern furnaces are reported to be urgently seeking tonnage, and in their efforts to secure business some have gone to $11.50 at furnace for No. 2 foundry. It is stated that Northern furnace interests have met Southern producers prices at Indianapolis. The general consumption of pig iron from all reports shows some improvement, although still on a very moderate basis. Inquiries from the East are more numerous. There is apparently a slight but perceptible improvement in the undertone of the whole situation. We quote in carload lots f. o. b. Cincinnati:

| | |
|---|---|
| Southern Foundry No. 1 | $12 50 to 12 75 |
| Southern Foundry No. 2 | 12 00 to 12 25 |
| Southern Foundry No. 3 | 11 50 to 12 00 |
| Southern Foundry No. 4 | 11 00 to 11 25 |
| Southern Foundry No. 1 soft | 12 50 to 12 75 |
| Southern Foundry No. 2 soft | 12 00 to 12 25 |
| Gray Forge | 11 00 to 11 25 |
| Northern Foundry No. 1 | 12 50 to 13 65 |
| Northern Foundry No. 2 | 12 65 to 13 15 |
| Southern car wheel iron | 16 25 to 16 50 |

**Finished Material.**—The demand has been somewhat improved and there is a more encouraged tone to the situation. Some of the independent mills have advanced quotations on bar iron this week and we quote the market now 1.40c with a lower price only obtainable on attractive specifications. Steel bars are quoted at 1.48c, half extras, with dealers quoting 1.75c to 1.90c for iron and steel out of store. Galvanized sheets are being quoted at 75 and 10 to 75, 5 and 2½ percent off. We quote black sheets, No. 27, at 2.30c in car lots of 500 bundles. Black sheets out of store are selling at follows: No. 28, 2.70c; No. 27, 2.60c; No. 16, 2.35c; No. 14, 2.25c; No. 12, 2.16c; No. 10, 2.05c. Tank plates are dull and sell out of store at 2c for ¼-inch and 2.10c for 3-16-inch. Beams and channels are quoted at 2c from stock and angles at 1.90c to 2c for base sizes.

In merchant pipe the market is still quiet with independent mills shading the schedule of the leading interest and securing business when the sizes can be furnished. Boiler tubes are only quoted upon specifications and we omit quotations. We quote merchant pipe in carload lots f. o. b. Cincinnati as follows:

MERCHANT PIPE.
(Basing Discounts.)

| | Steel Pipe. Black. Percent. | Steel Pipe. Galv. Percent. | Guaranteed Wrought Iron Pipe. Black. Percent. | Guaranteed Wrought Iron Pipe. Galv. Percent. |
|---|---|---|---|---|
| ⅛, ¼, ⅜ inch | 68.7 | 53.7 | 67.7 | 52.7 |
| ½ inch | 71.7 | 61.7 | 70.7 | 60.7 |
| ¾ to 3 inch, inclusive | 77.2 | 67.2 | 76.2 | 66.2 |
| 3½ to 6 inch, inclusive | 75.7 | 65.7 | 74.7 | 64.7 |
| 7 to 12 inch, inclusive | 71.2 | 55.7 | 70.2 | 54.7 |

BOILER TUBES.

| | Steel Percent. | Iron Percent. |
|---|---|---|
| to 1½ inch | 41.2 | 37.7 |
| 1¾ to 2¼ inch | 54.2 | 36.7 |
| 2½ inch | 56.7 | 41.7 |
| 2¾ to 5 inch | 63.2 | 49.2 |
| to 13 inch | 54.2 | 36.7 |

**Old Material.**—The market remains quiet with no quotable change in prices. Dealers report the market exceedingly dull. We quote:

| | |
|---|---|
| Old No. 1 railroad wrought, net tons | $10 00 to 10 50 |
| Cast machine and foundry, net tons | 9 50 to 10 00 |
| Old iron rails, gross tons | 12 50 to 13 00 |
| Old steel rails, gross tons | 9 50 to 10 00 |
| Old short lengths, gross tons | 10 00 to 10 50 |
| Old iron axles, net tons | 13 50 to 14 00 |
| Stove plate, net tons | 6 00 to 6 50 |
| Wrought turnings, net tons | 6 00 to 6 50 |
| Cast borings, net tons | 3 00 to 3 50 |

## NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, No. 150 NASSAU ST., July 26.

**Pig Iron.**—The past week witnessed no material change in the market from the week previous, unless it be a slight increase in the number of inquiries. The tonnage booked was fairly large, with Northern furnaces capturing the most of it. The chief reason for this is that Northern makers have shown a disposition to take business at lower prices. This has occurred so frequently that reliable quotations are difficult to obtain, each transaction, it would seem, having characteristics as to quantity and delivery which govern the price. Another reason is that Southern interests have not the same urgent call for their product since they raised their prices. Furnaces that rigidly adhere to $9.50 for No. 2 foundry see many old customers placing their orders with competitors at lower prices, although $9.25 is the lowest figure for actual business. If only a fair portion of the inquiries in the market resulted in orders, some excellent business could be reported. As it is, there seems to be no great eagerness to close. Reports from foundrymen indicate that trade with them has not improved to any extent recently and all have light stocks of iron on hand. The contractors for the castings for the East River section of the Pennsylvania tunnel still refuse to give out any details concerning the awards. There is no doubt that the Davies & Thomas Co., of Catasauqua, Pa., has obtained the contract for one-half of the 108,000 tons, but official confirmation is withheld as to the report that they will get the contract for the remainder also. One bidder on the second half of the contract, who was on the point of closing, is understood to have withdrawn. New York pig iron quotations at tidewater follow: Northern No. 1 X, $14.50 to $15; No. 2 X, $14.00 to $14.50; No. 2 plain, $13.50 to $14.00; Southern No. 1 foundry, $13.50 to $13.75; No. 2 foundry, $13.00 to $13.25; No. 3 foundry, $12.50 to $12.75; No. 4 foundry, $12.00 to $12.25.

**Rails.**—While no contracts of magnitude have been placed, orders for small lots, especially from 100 to 500

tons, are being booked pretty freely. Standard sections are $28 at mill. The "orders" recently reported in Wall Street have not come upon the books of the rail pool as yet.

**Finished Iron and Steel.**—Business in structural shapes continues to have many hopeful features, the most notable being the large amount of estimating that is being done. From the standpoint of orders there is nothing of special importance to note, contracts recently placed having been for small lots, but making up a favorably good tonnage. Conditions in plates are better now than a few weeks ago, but new business is not of an impressive character. Sheets continue quiet with the buyer in a position to dictate prices, especially in round lots, of which there are very few going, however. Bars are inactive, current orders being for small amounts. New York prices are as follows: Beams and channels., 15 inch and under, 1.75c to 1.90c; angles, 3 to 6 inches, 1.75c to 1.90c; zees, 1.75c to 1.90c; bulb angles, 2.05c to 2.35c; deck beams, 2.05c to 2.35c; sheared steel plates, tank, 1.74½c to 1.80c; flange, 1.84¼c to 1.90c; firebox, ordinary, 1.94½c to 2c; refined iron and soft steel bars, 1.49½c; sheets, in carload lots, New York, No. 28, black, 2.35c to 2.40c; galvanized, 3.40c to 3.45c.

**Old Material.**—Several conditions are the same as for weeks past. The belief that higher prices are imminent has attained such a strong foothold that everybody seems to be waiting for the arrival of the expected improvement. As a result there is very little business, such activity as exists being confined to old steel and iron rails, axles, and heavy steel scrap for open-hearth use. Prices on the whole are a little firmer, especially in the materials mentioned. Holders ask the following prices per gross ton:

| | |
|---|---|
| Old iron rails | $14 00 to 14 50 |
| Old steel rails, long lengths | 11 75 to 12 50 |
| Old steel rails, short pieces | 10 00 to 10 50 |
| Relaying rails | 16 00 to 17 00 |
| Old car wheels | 11 50 to 12 50 |
| Old iron car axles | 15 50 to 16 00 |
| Old steel car axles | 14 00 to 14 50 |
| Heavy melting steel scrap | 10 50 to 11 00 |
| No. 1 railroad wrought scrap | 11 50 to 12 00 |
| Iron track scrap | 10 50 to 11 00 |
| Wrought pipe | 7 75 to 8 25 |
| Ordinary light iron | 4 50 to 5 25 |
| Cast borings | 3 50 to 4 00 |
| Wrought turnings | 5 50 to 6 00 |
| No. 1 machinery cast | 9 00 to 10 00 |
| Stove plate | 7 50 to 8 25 |

## BIRMINGHAM, ALA.

BIRMINGHAM, Ala., July 25.—The Alabama pig iron market is still firm with No. 2 foundry iron quoted at $9.50 a ton and $9.25 the minimum, though some large producers refuse to sell at this figure. With some furnaces sales are aggregating more than production. Up to July 20 the Sloss-Sheffield Steel & Iron Co. announced that its sales for July were almost equal to its production, and the record made last month when sales exceeded production about 18,000 tons, will be improved on this month. There are predictions that there will be a further advance of fifty cents a ton by the middle of August. The Tennessee Coal, Iron & Railroad Co. still has six furnaces banked. The Woodward Iron Co. has repaired its two furnaces which have been banked practically since July 1. It is expected that these furnaces will resume operations by the end of this week.

The suspension of work on the part of the union coal miners in this state at the mines of furnace companies continues, though there were hopes today that the differences would be settled. Importation of Virginia coke continues, though the price has advanced 25 to 35 cents. The furnaces in blast are making a good output of iron. Shipments are not as active as they might be, and railroad officials are discussing the possibility that by the last of August the iron movement will be heavy, and with the cotton movement then on will bring about a shortage of railroad cars again. Stocks of iron on the Birmingham furnace yards are clearing off slowly.

The Lookout Mountain Iron Co.'s new furnace at Battelle will be blown in Aug. 15. Its daily capacity should be 300 tons and over. The company is already mining coal and ore and manufacturing coke at Battelle.

Considerable finished iron and steel has been shipped from the rolling mills in this section recently and stocks on hand are now very low. The Tennessee Coal, Iron & Railroad Co. is still making efforts to operate its Bessemer, Ala., as an "open shop" and two or three departments are being run.

The following pig iron quotations are given here: No. 1 foundry, $9.50 to $10; No. 2 foundry, $9.50; No. 3 foundry, $9 to $9.25; No. 4 foundry, $8.50 to $8.75; gray forge, $8 to $8.50; No. 1 soft, $9.50 to $10; No. 2 soft, 9.50.

## PHILADELPHIA.

July 26

Although inquiry has been fair, sales have not been large enough to affect the market. Favorable financial conditions are not reflected in the trade and there is a feeling that, unless production is further restricted, prices will be lower. Railroads are making very small purchases and their policy has a depressing effect. Shipbuilding is very dull, with no prospects of early improvement.

**Pig Iron.**—Inquiries for a considerable tonnage have been sent out, but it is a question whether they will result in much business. There is no difficulty in getting No. 2X foundry at $14.50, delivered, and a lower quotation could be obtained on an order of fair size. Mill irons sell at $13 to $13.25. We quote as follows for Philadelphia and near by deliveries: No. 1 X foundry, $14.75 to $15.25; No. 2 X foundry, $14.25 to $14.50; No. 2 plain, $13.50 to $13.75; standard gray forge, $13 to $13.25; ordinary, $12.50 to $13.

**Finished Material.**—Small orders are rather numerous, but the total tonnage is not large. We quote: Beams, channels and angles, 1.73½c to 1.85c, according to the specifications, and small angles, 1.50c to 1.55c. Bars, both iron and steel, 1.48½c to 1.55c; skelp, 1.45c to 1.50c, sellers' mill for grooved and a tenth more for sheared.

**Old Material.**—There is a little more inquiry, but sales are few and prices stationary. We quote: No. 1 steel scrap, $11 to $11.50; low phosphorus scrap, $15.50 to $16; old steel axles, 14.50 to $15; old iron axles, $17.50 to $18; old iron rails, $13.75 to $14.50; old car wheels, $10.50 to $11; choice railroad No. 1 wrought, $12.50 to $13; machinery cast, $11.50 to $12.25; No. 2 light scrap (forge), $9 to $9.50; No. 2 light scrap (ordinary), $7.50 to $7.75; axle turnings, $9 to $9.50; wrought turnings, $7.50 to $8.50; cast borings, $6 to $6.50; stove plate, $8.50 to $9; wrought iron pipe, $9.50 to $10.

# The Metal Market.

## NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, NO. 150 NASSAU ST., July 26.

**Pig Tin.**—Since our last report the market underwent an appreciable advance, speculative interests abroad having given it an upward turn. There has been a decline, however, from the highest prices reached, but the market at this writing has many firm features, consumers are only providing for immediate needs, pending developments in the speculative movement now going on. London has been very strong during the week, with transactions on a liberal scale. Closing prices today follow: Spot and July, 26.75 to 26.90c; August, 26.72½ to 26.90c. London's closings today follow: Spot and futures, £121 15s. Arrivals at Atlantic ports for the month to date aggregate 2,101 tons, with 2,594 tons afloat.

**Copper.**—Outside of heavy buying for export, which gives many evidences of continuing, the market furnishes little for comment. In local trade circles reports are that only a fair business is doing, with electrolytic chiefly in demand. In London during the week the market has been fairly active, with prices not as strong as they were last week. Today's closings follow: Lake 12⅝ to 12⅞c; electrolytic, 12⅝ to 12¾c; casting, 12⅜ to 12½c. London's closings today follow: Spot, £57 5s; futures, £57 3s 9d. Exports for the month to date amount to 14,229 tons.

**Lead.**—The leading interest has reduced the price for 30-day shipments from 4.20 to 4.10c. Spot is lower at 4.20 to 4.25c. St. Louis declined to 4.02½c. London is weaker at £11 13s 9d.

**Spelter.**—Spot is quiet at 4.85 to 4.95c. St. Louis declined to 4.75c. London is higher at £22 7s 6d.

**Antimony.**—Cookson's is 7.25c asked. Hallett's is 7.00c to 7.25c. Other brands are quoted at 6.00c to 6.25c.

**Quicksilver.**—We quote $42.50 per flask of 76½ pounds in lots of 100 flasks. London is £7 17s 6d.

**Nickel.**—Sales are made at 40c to 47c for large lots down to a ton, and at 50c to 60c for smaller quantities.

## CHICAGO.

OFFICE OF *The Iron Trade Review*,
1164 MONADNOCK BLOCK, July 26.

There has been a fair demand for metals during the past week and business seems to be improving. Lake copper is strong at 13c for carloads and 13¼c for less than carload lots; casting, 12¾c for carloads and 13c for smaller quantities. Pig tin is scarce as a result of the curtailment of production for the purpose of advancing prices. It is now quoted in this market, 28½c to 29c, according to quantity. Spelter is unchanged selling freely at 5c to 5¼c in carload lots. Sheet zinc is without change at 6c for carload lots of 600-lb. casks, and 6.25c to 6.25c for less than carload lots. Pig lead is weak, and has dropped $2 a ton since our last report. It is now quoted 4.10c for 50-ton lots, 4.15c for carload lots, and 4.25c for lesser quantities.

There is a better demand for old metals and prices are firm. We quote as follows: Copper wire and heavy, 10¼c copper bottoms, 9¼c; copper clips, 10c; red brass, 9¼c; red brass borings, 7¼c; yellow brass, heavy, 7c; yellow brass borings, 6c; light brass, 5c; tea lead, 3¼c; zinc, 3.40c.

## Frick Coke Co., builds 1,000 Ovens.

The H. C. Frick Coke Co., one of the subsidiary companies of the United States Steel Corporation, awarded contracts this week for the erection of 1,000 additional ovens to be erected in the Connellsville region. One of the plants will be built in Franklin township, while the other two will be built in George township, both locations being in the heart of the Connellsville field. This additional coking capacity will probably be the last to be built by this company in the Connellsville field, marking the development of the last of the coking coal properties of this company in the upper basin of the Connellsville vein. The coal acreage under development is extensive and various estimates have been made from 50 to 75 years before the best of the coking coal has been taken out.

An order signed by Vice-Chancellor Garrison was filed at Trenton, N. J., July 25, appointing Frank H. Stillman, of New York, and Frank B. McDermott, of Jersey City, receivers for the Conover Mfg. Co., which is alleged to be insolvent. The complainants are Thomas Cogan, secretary; E. K. Conover, president; and the Greenville Coal & Ice Co. It is alleged that the company has liabilities aggregating $76,727 and nominal assets of $99,992. Of the latter, nearly $25,000 is in unfinished stock and contracts. The company has no funds with which to carry on its ordinary business, and owes protected notes amounting to more than $4,000. It is engaged in the manufacture of steam condensers in Jersey City.

The O'Rourke Engineering & Construction Co., which has the contract for building the Pennsylvania railroad tunnel under the Hudson river, has placed the order with the Ingersoll-Sergeant Drill Co. for two central compressed air power plants to be located at New York city and Weehawken, N. J. This order includes six 36 in. stroke Corliss air compressors each of 3,890 cubic feet capacity. With the O'Rourke plant installed, the total number of Ingersoll-Sergeant compressors supplying air for subaqueous tunnels in New York will be as follows: Six class A straight line compressors ten Corliss duplex compressors, 3 class H duplex compressors, and two class G duplex compressors.

On Aug. 1, the general and executive offices of The National Wire Corporation will be moved from New Haven, Conn., and located in the Engineering building, No. 114 Liberty street, New York.

## PERSONAL.

Frederic A. C. Perrine, first vice president of the Stanley Electric Mfg. Co., of Pittsfield, Mass., which is controlled by the General Electric Co., of New York, has resigned his position in order, he states, to devote his attention exclusively to private practice as consulting engineer, in which profession he is one of the best in this country. He will be succeeded by C. C. C. Chesney, who has been prominently identified with the Stanley Co.

W. H. Kelly has been appointed foreman of the plant of the Youngstown Foundry & Machine Co. He was formerly superintendent of the Buckeye Engine Co., Salem, O.

D. D. Lewis, who was superintendent of the rail mill of the Algoma Steel Co. (Consolidated Lake Superior Co.), has been appointed to the same position under the Lake Superior Corporation at the plant at Sault Ste. Marie, Ont.

E. H. Williams, manager of the Toledo Furnace Co., Toledo, O., has returned from a two months' trip abroad.

Henry C. Frick was one of the passengers who sailed July 22 on the White Star liner Cedric for Liverpool.

M. McMurray, formerly general superintendent of the American Steel & Wire Co.'s blast furnaces and steel works in the Cleveland and Pittsburg districts, who recently resigned to take charge of the blast furnace department of M. A. Hanna & Co., of Cleveland, was presented by his former associates a few days ago with a loving cup of special design and suitably engraved, a large cut glass punch bowl, a dozen cut glass cups and silver ladle, and a smoking set. Mrs. McMurray was given a silver tea service.

Frank H. Goodyear, vice president of the Buffalo & Susquehanna Iron Co., will sail Thursday of this week for a six weeks' trip in Europe.

Lewis E. Dunham has resigned as manager of the Ashland Iron & Steel Co., operating the Hinkle charcoal furnace at Ashland, Wis., the same to take effect Aug. 1. Mr. Dunham has been connected with this company for the past fifteen years. After taking a much needed rest he will handle certain specialties in the wood by-product industry.

Robert Flenniken, of the Cherry Valley Iron Co., Pittsburg, returned last week from an extended automobile tour through Europe.

Percy Young, paymaster for the Ohio plant of the Carnegie Steel Co., Youngstown, O., and has been succeeded by Blaine Edwards.

W. H. Newton has purchased the business of Edward Haupt, 184 La Salle street, Chicago, manufacturers' agent in the sale of steel bridges, structural and ornamental iron, steel and brass work, castings, etc.

William Wilkins, Wheeling, W. Va., formerly connected with steel corporation furnaces in that district, has been made manager of the Hinkle furnace of the Ashland Iron & Steel Co., Ashland, Wis., to succeed L. E. Dunham.

Dr. Elmer E. Brown, of E. E. Brown & Co., Philadelphia, Pa., has sailed for a two months' trip abroad, touring England and the Continent.

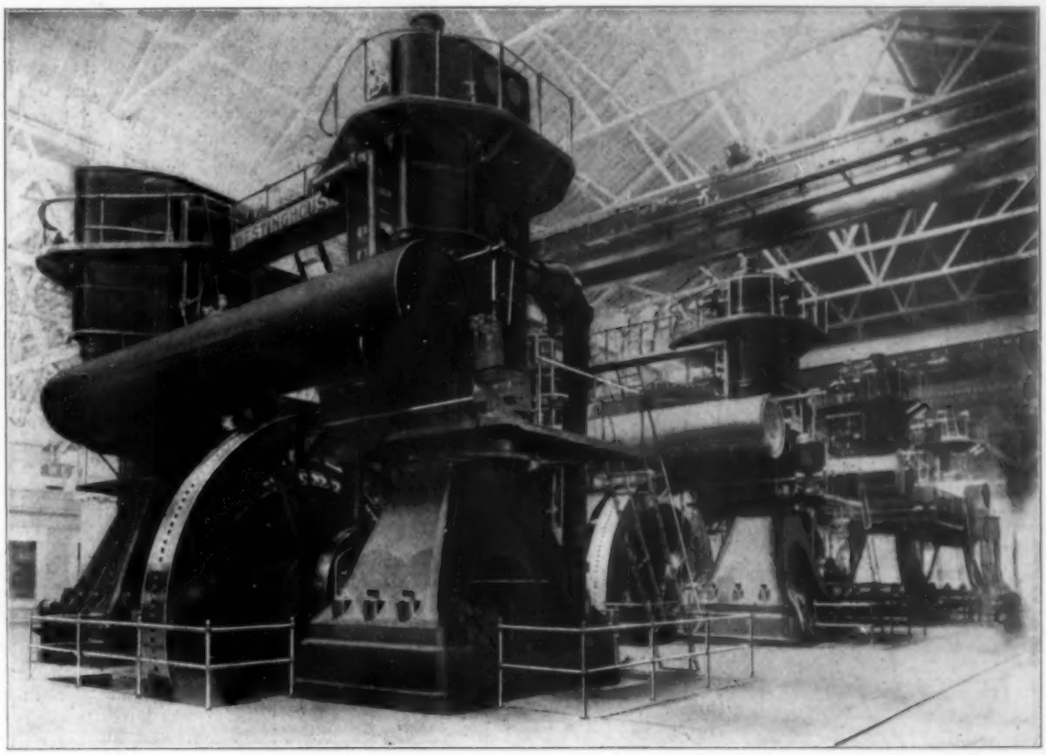
Lyman B. Brainerd has been elected president of the Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn., to succeed the late J. M. Allen.

Soft carbon steel plates and tubes become permanently contracted when heated and cooled frequently, and it has been found that a 25 percent nickel-steel tube, when heated to a dull red, showed a greater expansion than the mild carbon steel tube. Further experiments have shown, however, that the alloy containing between 30 and 40 percent nickel is less susceptible to this expansion. The nickel-steel tube also exerts a greater resistance to corrosion, possesses greater tensile strength, and any elongation due to expansion in service is distributed equally over its entire length, whereas the soft carbon steel generally elongates locally.

Seneca D. Kimbark, president of the S. D. Kimbark Co., Chicago, iron and steel jobbers, announced his retirement from business last week. The same day this announcement was made public, the firm which Mr. Kimbark organized 46 years ago, was absorbed by Kelley, Maus & Co., of Chicago.

## WESTINGHOUSE POWER PLANT AT ST. LOUIS.

The main service plant at the Louisiana Purchase Exposition, for which the Westinghouse Electric & Manufacturing Co. received the general contract, is a notable feature of the Westinghouse exhibits, because of the commanding size of the four big electric generating units, each of 2,000-k. w. capacity. At Chicago, in 1893, the great central station plant, which also was installed by the Westinghouse Electric & Manufacturing Co., was a complete exhibit of the most modern type of electrical machinery at that time, and the twelve 750-k. w. generators, each at 2,200 volts, were the largest alternating current polyphase machines ever constructed, constituting the largest polyphase plant then in service. The 2,000-k. w. three-phase alternating current generators of the St. Louis Fair plant, which operate at a speed of 83½ revolutions per minute and deliver a 25-cycle current at 6,600 volts, although of almost three times the individual capacity of those seen at Chicago, are of course not at this day remarkable on account of their size, and indeed entrance to the service plant exhibit is through a large 35-foot plaster ring molded in close representation and in exact duplicate size of the stationary armature of the 5,000-k.w. alternating



2,000-K. W. WESTINGHOUSE GENERATORS AT THE WORLD'S FAIR, ST. LOUIS.

current Westinghouse generators constructed for the elevated and subway train service in New York City. The 10,000-k w. generators for the Ontario Power Co. are now being constructed in the East Pittsburg works of the Westinghouse Electric & Manufacturing Co.

The advantage in floor-space economy of direct connected generators was conclusively demonstrated at Chicago, six of the twelve 750-k. w. generators there used being driven direct by Westinghouse-Columbian steeple engines, the other six being belt-driven by various types of engines, the space occupied by the smallest of the belt-driven generating units complete being about 65 by 27 feet. The units at St. Louis, almost three times as large, are direct driven, of course, and the space occupied by each over all, with the 36 x 76 x 54 in. Westinghouse Corliss vertical cross-compound engines, is only about 35 by 15 feet, and 32½ feet in height, the fly wheels being 23 feet in diameter. The Corliss valves are operated by "three-quarter" gear, there being an enclosed type of governor. At full load each set exerts 2,883 indicated horsepower, with 27½ lb. mean effective pressure referred to the low-pressure cylinder. The overload capacity is 5,244 horsepower under normal conditions of 150 lb. steam pressure and 26 in. vacuum. Each set of engines is coupled direct to a 2,000-kilowatt revolving-field alternating-current generator.

The total space devoted to the service electric plant in Machinery Hall, with the exciter units, condensers, cooling towers, and the 35-panel switchboard, is 26,260 square feet. The entire steam and electric station was designed and equipped by Westinghouse, Church, Kerr & Co., and all the motive power apparatus in connection with the generators, and in the steam generating plant in the nearby boiler house, was furnished by the Westinghouse Machine Co.

## Copper Consumption in Europe.

Referring to the exportation of copper to Europe, stating in this connection that the majority of this export copper has gone directly into consumption, the *Engineering and Mining Journal* says of the copper situation: "There is, so far as can be ascertained, no unusual accumulation of stocks anywhere abroad, in the hands of either dealers or manufacturers. Buying has been mainly to meet requirements. The price has not been at any time quite low enough to tempt purchases for speculation, or to hold for the future. European buyers have long memories; they have not forgotten the times of 11-cent copper, and quotations between 12 and 13 cents do not look cheap enough to them to induce the purchase of stocks for the future. There is no doubt that the actual consumption of the metal abroad is, just now, very large. Business has been good in Europe—except in Russia—and money is being invested in new enterprises more freely than last year. This has led to the undertaking of much new electrical work of all kinds, in which the use of large quantities of copper is a necessity. Moreover, there has been a considerable demand for the metal in the manufacture of war material quite enough to account for part of the consumption. The increase in buying has been more marked in Germany and France than in Great Britain. It has come in very well with the decreased demand here, and has been an important element in preventing a fall in prices, which would have been extremely trying to our copper producers."

The Sterling Foundry Co., 940 West Fifth street, Cincinnati, has made an assignment to C. C. Archer. The assets and liabilities are each placed at $4,000.

## CHEMICAL SPECIFICATIONS FOR PIG IRON.

The following contribution to the discussion of the paper of Edgar S. Cook on "Chemical Specifications for Pig Iron," read at the Atlantic City meeting of the American Institute of Mining Engineers, is made by B. F. Fackenthal Jr., president of the Thomas Iron Co., of Easton, Pa.:

The manufacturers of merchant pig iron can congratulate themselves that foundrymen are slowly but surely recognizing the fact that their mixtures should be made up according to chemical analyses, rather than by fracture; but in my experience many foundries ordering specification iron want the grading by fracture also. They want both the penny and the cake.

One of the largest customers of the Thomas Iron Co., who uses thousands of tons of Thomas iron yearly, always buys "No. 2 plain," stipulating for shipments from the lower pig beds when we can furnish them. Being an old furnace manager, he knows that the iron in the lower beds, having traveled farther from the furnace, cooling as it warmed the greater length of runner, solidifies sooner in the beds, and thus presents a closer grain; whereas, the iron of the upper beds, remaining longer liquid, will exhibit after solidification a fracture of higher grade, though the two may be identical in composition. In other words, No. 2 plain iron from the lower beds may be just as good in the cupola as No. 2X of the same cast from the upper beds, while it is cheaper, when the price is determined by grade and the grade by fracture. This founder has no laboratory; but his practical knowledge of the conditions of the pig bed has enabled him for many years to save the difference of price (at least 50 cents per ton) between No. 2 plain and No. 2X on a considerable proportion of the iron he has bought. Since classifying by analysis instead of fracture would put the No. 2 plain of lower pig beds in the same class with the higher priced No. 2X, of the same cast and composition, it is no wonder that as a buyer of superior shrewdness he prefers the old method.

Yet classifying by analysis, which is in such cases and in other ways often advantageous to the furnaceman, ought to be preferred by the founder, because it would enable him to calculate his mixtures with certainty. For there are both tricks of nature and tricks of the trade which may make the grading by fracture unfavorable and misleading to the consumer; and, after all, the most advantageous arrangement for both parties is that which is just to each. Unquestionably, such an arrangement should be based upon a common knowledge of the composition of the pig iron concerned; and this knowledge requires of the founder the determination of mixtures for the cupola, based on chemical data. This, however, will be of but little value to the founder who permits his application of chemistry to stop there and does not carry it also to the floor of his foundry, by regular tests of his castings. But some founders are not yet willing to take this trouble, and as a consequence they cannot locate the cause of unsatisfactory castings. Often they complain of the pig iron, when this was entirely suitable, but was spoiled in remelting. The following examples from my record of analysis may serve as illustrations:

1. Complaint was made that a carload of No. 2X Thomas iron produced hard castings, when soft ones were desired, and were reasonably to be expected from that grade of pig. The customer returned two pigs, marked respectively "hard" and "soft," and two samples of the unsatisfactory hard castings. These four samples were analyzed in the Hokendauqua laboratory, with the following results:

| | Hard pig Percent | Soft pig Percent | Casting Percent | Casting Percent |
|---|---|---|---|---|
| Silicon ..... | 2.680 | 2.633 | 2.327 | 2.257 |
| Sulphur ..... | 0.022 | 0.023 | 0.263 | 0.249 |

The Thomas Iron Co.'s sampling of the entire carload, prior to shipment, showed silicon 2.61 and sulphur 0.022 percent. It is unusual for the analyses of selected pigs returned to the laboratory to correspond so closely to those of the furnace sampling. The "hard" pig was doubtless chilled in the runner and, therefore, not as open-grained as the "soft" one; but they doubtless came from the same cast, and possibly from the same bed. If the founder had bought by analysis and not by fracture, he would have preferred the "hard" pig, since it was slightly higher in silicon, and slightly lower in sulphur than the "soft" one. The castings sent for analysis contained about twelve times as much sulphur as the original pig iron, and the founder's difficulty was certainly due to bad cupola practice. The excessive amount of sulphur in the castings may have been due partly to fuel high in sulphur and perhaps partly to improper fluxing, but more probably to the use of too little fuel in re-melting the iron. The loss of silicon during the re-melting was about 13.8 percent, which shows fairly good practice in this respect.

2. Another customer, who complained that Thomas No. 2X iron gave him bad results, returned six pigs and a hard casing. The analyses of these samples, also the analysis

| | Furnace sampling of carload Percent | Six pigs returned Percent | Hard casting Percent |
|---|---|---|---|
| Silicon ..... | 2.70 | 2.854 | 2.257 |
| Sulphur ..... | 0.017 | 0.052 | 0.319 |
| Phosphorus ... | ..... | 0.812 | 0.800 |
| Manganese ... | ..... | 0.403 | 0.291 |

Loss of silicon on re-melt about 20 percent.

In this instance the pigs returned were much higher in sulphur, but the cause of complaint was doubtless the same as in the former instance, viz.: too much sulphur was allowed to be taken up in the cupola. A few more pounds of fuel would have corrected the difficulty and kept the sulphur out of the castings. The same customer reported that a previous shipment of iron, containing silicon, 2.40; sulphur, 0.041; and phosphorus, 0.736 percent, gave him entirely satisfactory results. I could give many examples of this kind, but these two are sufficient. Many foundrymen call for high silicon iron; and if the results are not satisfactory, they seem to think that still higher silicon would correct the evil. Our experience, however, is that, in many instances, the silicon specified was already too high, and that they required iron lower, not higher, in this element.

3. A complaint was made of Thomas No. 2X iron on account of the blow holes it contained, which, the founder said, were reproduced in his castings. The iron made at that time in one of our furnaces did, in fact, contain an unusual number of blow holes, and we experienced great difficulty in locating the trouble, which was finally traced to the quality of the sand used for the pig bed. The founder sent us four samples of borings, two from the pig iron and two from the castings, which gave the following analyses:

| | Pig iron, solid part Percent | Pig iron, side of blow holes Percent | Castings, solid part Percent | Castings, side of blow holes Percent |
|---|---|---|---|---|
| Silicon ..... | 2.608 | 2.617 | 1.778 | 1.778 |
| Sulphur ..... | 0.029 | 0.027 | 0.150 | 0.129 |
| Phosphorus ..... | 0.836 | 0.860 | 0.864 | 0.852 |

Loss of silicon in re-melting about 32 percent.

I cannot see why blow holes occasioned by bad sand in the pig bed should be injurious to the iron, or why such blow holes should be reproduced in the castings. Both in the pig and in the castings the sulphur was lower in the iron around the blow holes than throughout the solid part of the pig. This is another instance in which the iron was permitted to take up excessive sulphur in the cupola, and doubtless goes to show that the founder was trusting to the appearance of the pig rather than to its chemical analysis.

4. Three carloads of pig iron shipped by rail were delivered to the wrong customers. A puddling furnace received No. 2 plain, intended for a pipe foundry; the pipe foundry received a car of No. 2X intended for a pump works; and the pump works receiving the car of gray forge intended for the puddling mill. All these shipments were received and used without complaint. In these cases the fracture could not have been taken into account by the customers.

5. To a customer operating puddling furnaces, who always specified open iron, there was shipped by mistake a car of silver gray iron, containing 6.38 percent of silicon, made while blowing in a furnace. He reported that particular carload as having given very satisfactory results; and for some time thereafter he referred to this shipment and wanted more like ft. The iron was open grained, and the appearance suited him. I have often wondered whether he used it alone or in mixture with some other iron that happened to be particularly low in silicon.

6. Some years ago, visiting a furnace plant in the Birmingham district, Alabama, I found that special efforts were being

made to keep the iron in the pig beds hot as long a time as possible, by covering it with sand to the depth of 6 or 8 inches. It was claimed that this annealing process toughened the iron and permitted the segregation of an additional amount of graphitic carbon. On my return home, believing that I had learned something of great value, I tried the experiment at the Durham furnace, of which I was manager at that time, with the result that after the iron was cool it was impossible to break the pigs from the sows by sledge hammers or other ordinary means. The pig iron was finally dragged out of the cast house with a team of horses, one bed at a time, and the entire force of blacksmiths was used to cut it apart with cold cutters. No further attempt to improve the fracture was made.

I will close these remarks by giving the following statement of interesting experiments, made in the cupola of a large foundry, to show the losses of silicon in re-melting, as affected by the presence of manganese:

| Sample No. | Manganese Percent | Percent of total silicon lost in re-melting |
|---|---|---|
| 1 ..... | 0.04 | 34 |
| 2 ..... | 0.20 | 23 |
| 3 ..... | 0.43 | 12 |
| 4 ..... | 0.53 | 4 |

I am not at liberty to give the brands of iron, except to say that Sample No. 3 was Thomas iron.

## Cramp Steel Co. Affairs.

Stockholders of the Cramp Steel Co., owning a property at Collingwood, Ontario, and who paid real money for their belongings, charge mismanagement of the property. The greater portion of the money which was put into the company came from Americans. A circular issued by these stockholders states that the company was incorporated with a capital of $5,000,000, of which $3,250,000 of the common was issued and about $500,000 preferred was also issued and sold for cash. Of the amount of common stock outstanding, it is alleged that over $2,000,000 was issued to officers of the company, nearly $500,000 being taken by one man. The old management is charged with having raised $400,000 in cash from the sale of stock, and instead of installing a blast furnace, which was part of the agreement, "an old second-handed small-sized open-hearth plant was purchased in Indianapolis at a cost of about $60,000, to which should be added the cost of installing it at Collingwood, a liberal estimate of the total amount expended would be about $200,000, leaving fully $200,000 of the $400,000 accrued from the sale of stock unaccounted for."

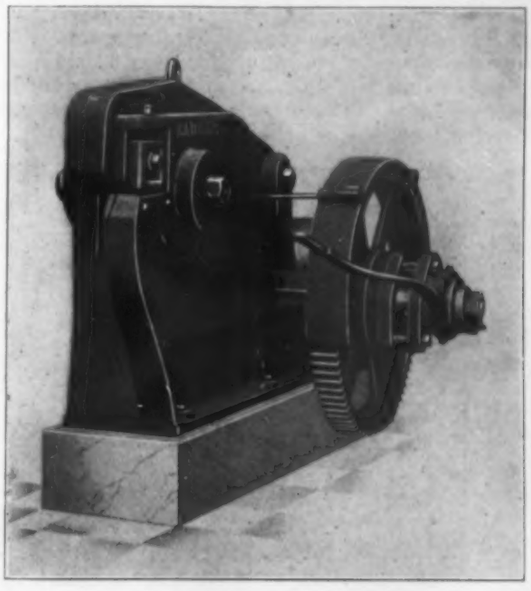
To avoid paying duty into Canada, this furnace was imported as "scrap iron." It is also charged by this committee that without the authority of the stockholders the company had borrowed $52,000 from the North American Trust Co., giving a mortgage which would enable the trust company to seize the plant within 24 hours' notice. This notice, it is claimed, has been given and the trust company, being anxious to secure the money loaned, is making efforts to take the property, which, if successful, would wipe out the claim of the present shareholders. The purpose of the dissatisfied stockholders is to reorganize the property, but there seems to be some question as to the method of procedure.

The first clash between the stockholders who were endeavoring to protect their interest, and the old management, occurred on July 14, at Toronto, when the old board of directors, consisting of A. B. Chandler, William M. Cramp, W. Seward Webb, H. L. Burridge, Charles Cramp, Sir Charles H. Tupper, J. Wesley Allison, J. R. Mowan, A. MacLean MacDonnell and Maj. Collins were voted out of office and a new board of five members elected as follows: Maj. J. A. Currie, A. MacLean MacDonnell, Duncan Donald, W. J. Lindsay and J. T. Duguid.

The year book and directory of the Chamber of Commerce, Pittsburg, which has just been issued, is a well printed volume giving not only much information about iron, steel, coke and other industries of the Pittsburg district, but also a full report of the addresses of Gov. Pennypacker, Senator Foreaker and others delivered at the annual banquet of the Chamber. The chapter on iron and steel industries is by James M. Swank and that on the coke trade by H. P. Snyder.

## BADGER ALLIGATOR SHEAR.

The accompanying cut shows one of the line of punches and shears manufactured by the Rock River Machine Co., Janesville, Wis. This type of alligator shear is designed for shearing flat and round bar stock. Being of generous proportions it is capable of resisting shocks it may be called upon to withstand within certain limits. The lever is directly connected to the eccentric by means of a link and pin arrangement, rendering the machine noiseless while in motion. The gears are of semi-steel, cast from cut gear patterns. All bearings are of large dimensions and the shafts are of forged steel. The machine is fitted with tight and loose pulleys, also a pin clutch which engages the large gear for the purpose of setting the lever in motion. By means of this clutch the lever may be started and drawn out of the gear at the will of the operator. It will shear flat bars up to and including 6 x ⅝-in.



BADGER ALLIGATOR SHEAR.

and round bars 1½ in. in diameter. The weight of the tool is 3,150 lb.

## An Alabama Iron Ore Deal.

About three years ago Messrs. Fred and Mac Sloss began investigation of what is known as the deposit of gray or magnetic ore located near Sycamore, Ala., on the Alabama Mineral Division of the Louisville & Nashville railroad, in Talladega county. The investigation resulted in the sale of the property to the Shelby Iron Co., T. G. Bush, of Birmingham, and others. Mining machinery was installed and the development has been in progress for twelve months. It is now stated that there is a six-foot seam of ore running about two miles, and that this ore analyzes 46 to 47 percent iron, with other elements about the same as the red ore in the Birmingham district, except that the ore has a fluxing element equivalent to about six percent of carbonate of lime. The indications seem to show that there are probably 10,000,000 tons in the six-foot seam. Underlying this seam at a distance of only four feet is another containing nine feet of ore. It is estimated that there is a total of 25,000,000 tons in the two seams. The location is described as ideal for the erection of a blast furnace.

The Meyersdale Sheet Steel Co., Meyersdale, Pa., has organized by electing the following officers: C. W. Truxal, president, Meyersdale; A. F. Baungarten, vice president, Pittsburg; E. M. Beachley, secretary, Meyersdale; T. J. Costello, general manager, Fairmount, W. Va. The work of removing the machinery from Huntington, W. Va., will be commenced within a few days. The plant will start with 125 employes.

## RECENT FORMS OF MOTOR DRIVES.

As representing late departures in motor driven machinery, views are given below of a lathe and a shaper, which are among the new tools installed at the machine shops of the National Tube Co., at Lorain, O. They were furnished by the American Tool Works Co., of Cincinnati, O. Fig. 1 shows the regular type of 18-in. American lathe with 5-h. p. Crocker-Wheeler motor mounted above the head and connected to the all-gear headstock by gearings. The headstock is the company's standard geared construction, giving four positive changes through the four levers shown. The speeds thus obtained mechanically are supplemented by a number of intermediate speeds obtainable electrically through the controller of the motor. This controller is located at the back of the leg, where it is out of the way and yet readily accessible, and is actuated by the controller handle at the right end of the carriage, convenient to the operator. This handle starts, stops, or reverses the machine, and slight movements vary the speeds by small increments over preceding speeds. The operator thus has under immediate control any desired speed. The figures on the bed, which are an innovation in this instance, represent the swing over the bed, the swing over the carriage, and the capacity of the lathe between centers.

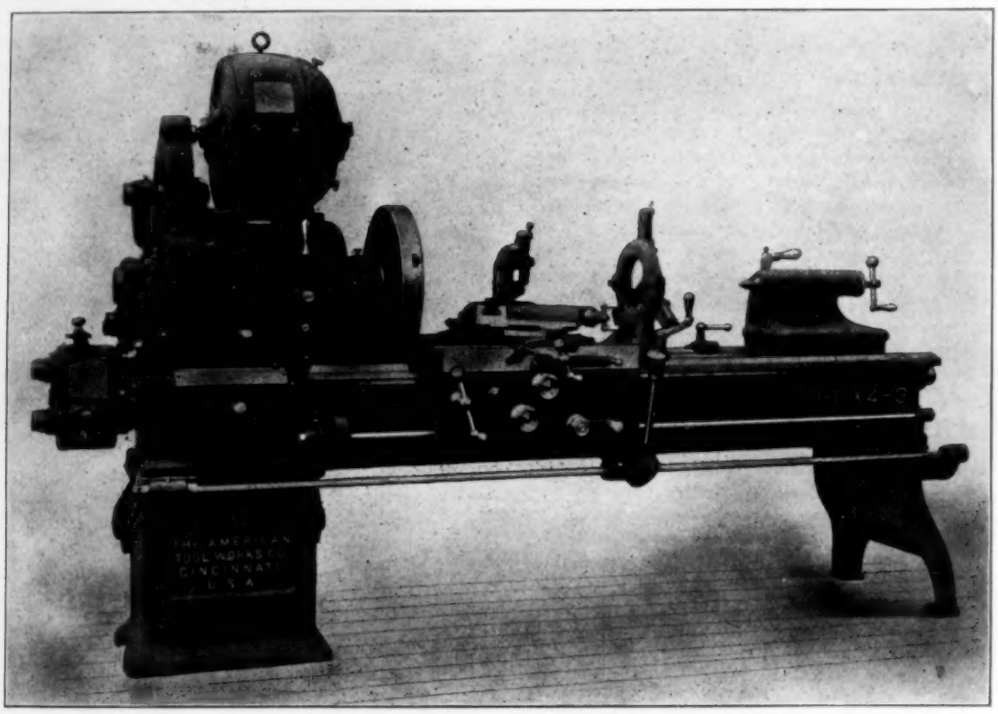


FIG. 1.—18-IN. AMERICAN ENGINE LATHE WITH MOTOR DRIVE.

A 24-in. lathe was also furnished with Crocker-Wheeler motor, mounted likewise above the head. The all-gear headstock is of the same construction as in the 18-in. machine, and the controller is governed by the handle, likewise at the end of carriage. A 60-in. lathe was part of the same order. It embodies some interesting details of construction, which will be given later.

The 18-in. shaper, shown in Fig. 2, is driven by a 5-h. p. Crocker-Wheeler motor, mounted directly at the rear of the shaper on a base cast integral with the shaper base, and is direct connected to the driving shaft through gearing. The controller is shown placed at the top of column in a very convenient position and gives a wide range of speeds to the ram. The various details of the construction of the machine itself have already been given in these columns.

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The Massachusetts Steel Castings Co. has been incorporated under Massachusetts laws with a capital of $500,000. The principal office is at Everett, Mass., and the company is practically a re-organization of the United States Steel Co. The incorporators are: Robert M. Morse, Boston; William G. Richardson, Cambridge; John M. Graham, Boston.

## ENDOWED MACHINE SHOP FOR APPRENTICES.

Prof. John E. Sweet, of the Straight Line Engine Co., Syracuse, N. Y., read a paper on the evening of July 21 before the Syracuse Metal Trades Association, on the Apprenticeship Question." It was supplemental to a paper Prof. Sweet read before the same association some months ago. The connection of the subject with trade schools is the particular phase covered by this latest paper, which is as follows:

The drift of my first paper was to show why the old apprenticeship system had died out and an attempt to show that sooner or later we must have schools or an equivalent to schools where our American boys can learn a trade, or depend on foreigners for our best work.

The trade schools, night schools and the engineering shops do what they attempt to do all right, but do not fill the shop requirements. Boys become students in the trade schools because in many cases that is the best they can do. Learning to fit pieces of wood together in different shapes or in all shapes will not train a boy to be a carpenter and joiner, or pattern maker; chipping and filing, turning and planing, milling and drilling; chipping and filing, turning and planing, mill-learning to make drawings of buildings make an architect.

Neither is it possible to make an architect in the way I believe it possible to make a machinist, pattern maker, molder, plumber, etc. They do not pretend to make architects in the trade schools any more than I would pretend to make mechanical engineers in the school of trade. They do come very near making brick masons at the Jewish school at New York by the trade school methods. That is to say, brick walls are built as they would be in a building and then torn down to be built up in some other way by other students. Plumbing is taught similarly, that is, pipe can be screwed together and unscrewed to be used over as lead pipe can be soldered and unsoldered. And for those two trades it is unquestionably a fairly good way.

### Pattern Shop and Foundry.

But that way will not do very well for a foundry and not at all for pattern making or machine work. In pattern making the thing done must be good enough to use or it is practically a total loss, and in a machine it is the same in the main. The different parts done in most of the college shops are simple exercises, pieces chipped and filed in some instructive form to drill the hand in special skill, and the work when done is thrown into the scrap heap. Other exercises are in the use of the various machines, attention being directed to

how the work is done, rather than to the ultimate use of the piece. Just whether that is the best method for the mechanical engineer it is not my purpose to discuss, but that such a method would not make draftsmen, pattern makers, molders and machinists, I am quite sure.

To make good foundrymen the boy must work where castings are made to be used and where the most of the product is in important part considered, and this is the weak part of the college foundry. In the school pattern shop the cost of the work is much less likely to be considered than in the foundry or machine shop, as it is in all shops where the three are carried along together in the same establishment. In the new order of things where pattern makers are carrying on business and competing with each other the question of cost is brought down immensely by competition, and in many cases this is carried to such an extreme as to result in poor work. One of the hardest things to teach pattern makers is to consider the ultimate use of the pattern. The poor pattern maker cannot make a pattern that needs to be good, good enough, and it is hard to get a pattern maker who is used to make good patterns to turn out a pattern from which only one or two castings are to be made, crude enough. In a pattern making school this could easily be made a part of the training.

If one is to learn to be a machinist he must work where machines are made, and, too, where many kinds are made. To get this varied experience it takes the apprentice and young mechanic years of time, and generally going from place to place. Whereas in a school this varied experience could not only be obtained at one place but in much less time.

In the ordinary shop, in fact in all shops, except in those cases such as Brown & Sharpe's, where a special instructor is employed, the apprentice has to acquire the trade by absorption, as it is no one's business to instruct him. He gains his knowledge by what he can see, and the bad habits, negligent and indifferent ways and methods are as easily absorbed as the good ones, and the progress at best is slow.

Where the whole business of the boy would be to learn and the primary business of the foreman to teach and to teach the best known ways, a year or two would be added to the useful life of the man and the money value of this year or two of time saved would far more than pay the young man to work for nothing for three years than to be paid apprenticeship wages in the ordinary shop, though the primary trouble is he cannot find the places to learn the trade even in the present indifferent way.

### Turning a Shop into a School.

In reply to the prevalent notion that a boy cannot learn a trade in school, let us see if we can tell why the following plan would not work. Take a well organized shop with all the tools and machines necessary to do various kinds of foundry, pattern and machine work, with drafting room, offices, etc., and I would add a school room, not particularly different otherwise from a regular shop except there shall be no dividends or taxes to pay. The running expenses for the first year would be insurance, coal, water, oil and engineer for power, material and general supplies, a small office force, foreman and instructors or journeymen, a sweeper and watchman and a very little in the way of helper, as that would be as in an ordinary shop, only much more largely so, done by the freshmen. Now the first year it would be too much to expect the enterprise to be self sustaining, but the second year a change for the better could not help but show itself. Such of the boys as had not fallen out would have a year's experience and some of them would in certain ways be, by their superior opportunities, pretty good journeymen, and replace some of the hired journeymen of the year before. Some would have shown their ability for draftsmen, some office men, some foundrymen, some pattern makers and others machinists and likely some more drop out.

The third year still more of the employed help could be dispensed with, better and more difficult work entrusted to the students, those showing the ability set to doing the drawing and so learn the relation between the drawings, patterns and finished work. Some set at tool making and those few that show the ability, inclination and have the means, started in the necessary preparatory work to enable them to enter the college of mechanical engineering. In this respect the school would become the sorting ground for the university.

The fourth year men would be enabled to fill nearly every place in the institution. The history of our times show that of those who learn the machinist's trade many

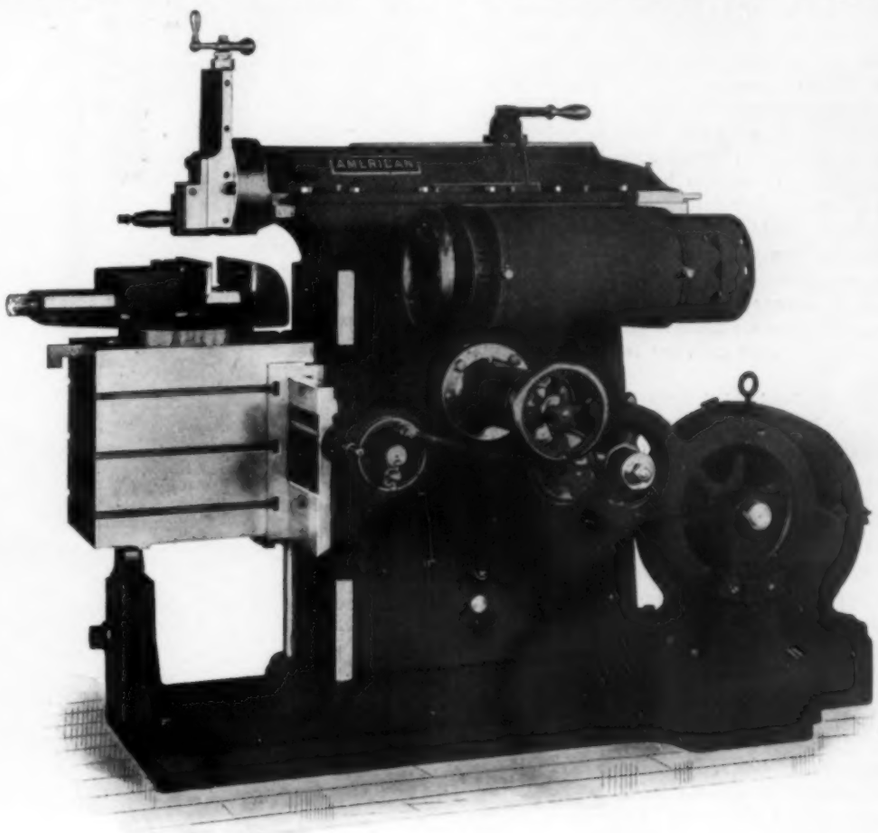



FIG. 2.—18-IN. CRANK SHAPER WITH MOTOR DRIVE.

make machinists, some make stationary engineers, some draftsmen, some clerks, some business men and some mechanical engineers, and this combination is exactly the combination that it takes with the pattern makers and founders to run a successful shop, and that is exactly what the successful school for apprentices has got to be.

**How to Make a School Shop Pay.**

The question naturally arises what is to be made to sell that will sell for enough to pay running expenses? At first such things as require the least expense for material and furnish the most work, as the work in the main will cost nothing, no matter how much of it is put upon a piece, if the piece will sell. Later better and better work could be done and as the final test will be the character of the men turned out, the best men can only be made by doing the best work. If better work is turned out than anywhere else, then the ordinary shops cannot complain that the school shop interferes with trades union labor.

As I have indicated, a school room, that implies some school work that could be imparted in two hours a day, and of just the kind that would be of the greatest use to the mechanic or necessary to enter a technical school. Certain things such as writing, spelling, arithmetic and the civilities of life insisted upon, and beyond that such as the ability of the student seemed to justify.

When the school turns out men that there is a demand for, the reputation of the school would soon be such that the boys would covet the chance to be given admission and many parents willing to pay tuition fees, the same as at college. But after all would it pay dividends, taxes and insurance? No. Does it pay young men to go to college? Well, some it does and some it does not. Does it pay to go to school Well, sometimes it does and sometimes it does not. Does it pay to learn a trade? Generally, and it is one of the best ways to keep men out of state's prison and the poor house.

But how is the fanciful school I have been describing to be brought about? It isn't in my time, but I hope in some of yours. Such changes before they materialize, have to be harped upon by some man for about twenty years, then if he gets some one to help pick the harp strings with him the idea will grow, and in this case slowly, because it not only requires a change in sentiment, but money. I can see no hope until the happy coincidence comes about by there being a good machine shop in the receivers' hands and the time when the glory of giving money to colleges, libraries and hospitals has grown stale, and the millionaire buys the shop, donates and endows it for the purpose.

What interest is all this to this association? First, to keep the supply of good workmen up to the demand, and second, to bring up a set of better educated men and further to fortify manufacturers against labor troubles. It may be easily imagined that I am laying unnecessary stress upon the importance of the machine shop to our lives, but if we stop to consider one prominent fact it will be seen that we must have the machine shop or go back to primitive methods, as the machine shop is growing of more and more importance.

Everything is being done more and more by machinery and that means more and more shops to build them in. The technical schools are training engineers and men to lead, but it takes from ten to a hundred men to execute the work of an engineer, and nothing is being done, or certainly less and less is being done, to train them. Unless not only one but hundreds of such schools as I have described are provided, foreign workmen will find work in this country and promote idleness in our own young men and the crop of labor troubles be multiplied.

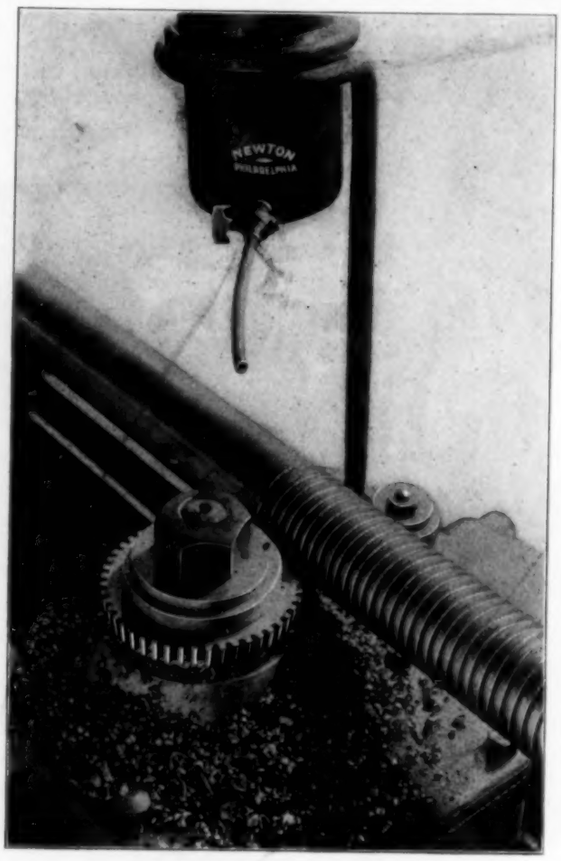
If the old apprenticeship system is revived it can only be done by change in sentiment as to the relative value of an academic education and a trade, whether it is of more value, and whether it is more likely to lead to happiness for one, to know what has been done in the world or for one to know how to do something himself, will be the question.

When a parent comes to the conclusion that he wants his son to learn a trade and is willing to pay the price, manufacturers will be willing to accept the money and give the boy a chance of there being money enough drifting the right way to establish the schools. This may be a long way off, but it has got to come.

## SCREW THREAD GENERATING MACHINE.

The cutting head of the screw thread generating machine illustrated revolves in a given proportion to the thread to be generated, and is geared to the correct relation to the lead of the thread being generated. It can be used for generating a thread of any pitch or number of leads with the exception of a square thread, which cannot be cut on a machine. The shaft on which the thread is to be generated is driven at the ordinary cutting speed for this work and the cutter is adjusted to take the full depth of the thread in one cut. The spindle to which the cutter is keyed obtains its rotative movement through a worm and worm wheel which gives a smooth action to the cutter by change gearing.

The machine is not as yet perfected, but the screws that have been generated on it have shown a great saving in time, together with an exceptionally good screw or thread. The chips shown on the cutter head give some idea of how the tool cuts. This tool was designed by the Newton Machine




SCREW THREAD GENERATING MACHINE.

Tool Works, of Philadelphia, who have applied for a patent on it.

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The long legal fight between the Westinghouse Co. and the New York Airbrake Co. reached an ending in New York, July 14, when an opinion of Judge Platt in the United States district court found for the plaintiff. A short time ago United States Commissioner John A. Shields, sitting as master, reported that he had found due the Westinghouse Co. from the New York Airbrake Co. for infringements of its brake patents the sum of $128,397.40. Judge Platt confirmed the master's report. The case has been pending in the courts for about eight years. When the suit was first commenced the damages claimed by the Westinghouse people amounted to over $1,000,000. An appeal will be taken.

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Milliken Bros., of No. 11 Broadway, New York, have obtained the contract for the construction of the steel frame work for the new building to be used by the department of Communications and Public Works in Mexico City, Mexico. About 2,700 tons of structural steel will be used.

## CHEMICAL ANALYSIS FOR THE FOUNDRY.

The second edition of "Methods of Chemical Analysis and Foundry Chemistry," by Frank L. Crobaugh, of Cleveland, has just come from the press. The preface notes that the first edition of 1,000 copies having been exhausted, the second edition has been prepared with considerable new matter in both the chemistry and foundry parts, the latter being in a large measure new. The chemical methods described in detail are those which the author's experience and study have determined to be best adapted to rapid work without sacrificing accuracy. The book emphasizes the necessity of foundrymen setting aside prejudices based upon the appearance of metal. Naturally Mr. Crobaugh sees large advantages which foundrymen are deriving and are yet to derive from the use of chemistry in the making of mixtures, and a careful reading of his book will show that he has good reason for the faith that is in him. He recognizes, as all who have observed recent developments in the foundry industry recognize, that there is still a great lack of appreciation on the part of many foundrymen of the amount and character of the assistance the chemist can give him. The book is full of valuable observations growing out of a varied experience with foundry work, and will be found to mingle well the common sense of the "practical" foundryman and the good sense of a chemist who puts a reasonable and conservative valuation upon the amount of the foundry advance that has been contributed by the laboratory. The book is a 12mo of 109 pages, and sells for $2. A few paragraphs taken at random will be of interest:

"It is believed by some that charcoal iron differs from coke iron of like analysis in the form in which its carbon exists and will produce better castings, but it seems reasonable to suppose, since in molten iron all carbon is in combination, the resulting casting must be identical with one produced from coke iron of like analysis."

"It seems positively proven from cases which the author has observed, that new linings in the cupola drive increased amounts of sulphur into the iron from the fuel as is the case in blast furnaces, doubtless due to the cooling effects of moisture in the lining."

"So little is known of the influence of copper, aluminum and titanium upon cast iron that a discussion seems unprofitable. In the case of the former it may be said that its percentage is not perceptibly diminished by melting in the cupola and that it seems to affect the casting as does sulphur."

"Melting iron at a high temperature with a little lime flux will assist very materially in producing castings low in sulphur, because at high temperature sulphur has a greater affinity for calcium than for iron. Limestone low in sulphur, especially as sulphides, is perhaps the cheapest and best flux, though some prefer flourspar. Fifty pounds of limestone or thirty pounds of fluorspar is the usual amount employed per ton of iron melted."

"From available data it would seem that the loss in melting pig iron alone due to its superficial sand, etc., should not exceed four and one-half percent, a part of which loss is due to the oxidation and fluxing off of some silicon, manganese and iron. Some carbon is also frequently burned out of the metal. The higher the temperature and the greater the volume of blast the greater the amount of oxidation."

"High silicon irons are called softeners for the reason that when they are mixed in suitable proportion with low silicon foundry irons, the resulting casting will be softer than if produced by either iron alone. Not infrequently do I meet foundrymen who though using such irons (8-15 percent) really believe them to be soft, when in reality they can only be drilled with great difficulty."

The second part of the book takes up foundry work briefly under these headings: Variations in Pig Iron, Scrap and Shot Iron, Coke and Coal, Figuring Mixtures, White and Chilled Castings, Malleable Castings, Chilled Rolls, Machiney Castings, Other Gray Iron Castings, Annealing Castings, Influence of Elements on Cast Iron, Relation of Chemist to Foundryman.

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A contract has been made by the American Car & Foundry Co. and the Colorado Southern railway by which the latter company purchases 700 box cars and 300 stock cars. The price to be paid for the cars is $680,035.

## A PORTABLE PUNCH.

A convenient and serviceable tool for sheet metal workers is a portable hand punch of such dimensions, weight and mechanism as permit its use by one man and its transference to any part of the shop, as the work requires. It is made of special process steel, is 3 feet in length, 5 inches high and weighs 12 pounds. It has a capacity of 3-16 hole through 3-16 iron or the equivalent. Any size of punch and die is furnished with the machine and punch and die are easily adjusted. Its light weight allows this tool to be used in any part of the shop and

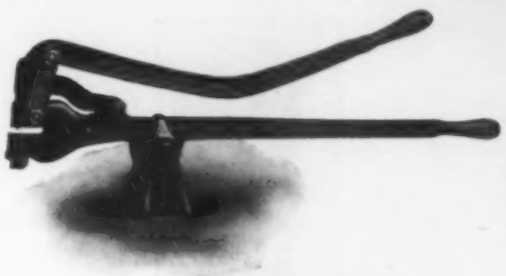

FIG. 1.—PORTABLE PUNCH.

one man is all that is necessary in using it. Among its uses are the punching of holes in ferrules 2 inches in diameter or larger, hub-bands, manholes, tank-heads or curved surfaces of any degree of curvature. It punches light angles or flanges, and its arrangement of throat is such that it will punch ½-inch from the flange or corner. It works by a toggle joint mechanism and punches and strips with either forward or backward motion of the lever, which insures rapid work as well as protection of the punch in stripping. The manufacturers furnish also a vise to which the punch can be attached and made use

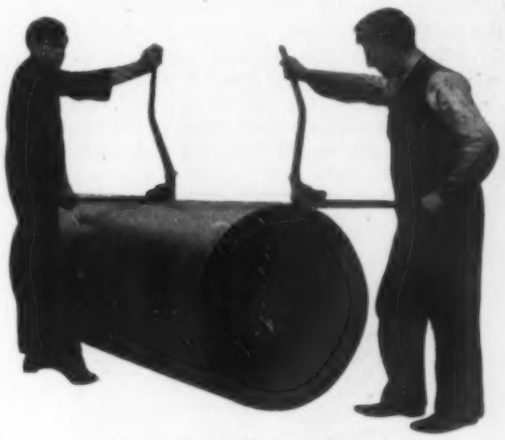

FIG. 2.—PORTABLE PUNCH IN USE.

of as a bench tool. The manufacturers are Joseph T. Ryerson & Son, of Chicago.

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A dispatch from Guadalajara, Mexico, gives some further information regarding the iron and steel enterprise in which Ralph H. Beach, until recently manager of the railway department of the General Electric Co., and George Townsend, of Indianapolis, are interested. Mr. Beach is now in Guadalajara and will devote his attention to the iron mines, mills and foundry at Ferreria de Tula, State of Jalisco, which have been leased for ten years, with an option to purchase for $700,000. The lessees expect to build up one of the most important manufacturing enterprises in the Mexican republic. There are now in operation a foundry, rolling mills and machine shop, and the output this year will amount to 2,500 tons of iron bars and castings. It is proposed to increase the capacity to 18,000 tons a year. The building of a steel plant is included in the plans.

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Directors of the Lamb Wire Fence Co., of Adrian, Mich., at their last monthly meeting declared an annual dividend of 12 percent on their capital stock, which is $500,000. The directors report the condition of the company to be excellent.

## T BOLT HEADS FOR CHUCKING.

A device that has proved an important time saver in the chucking of work has been introduced locally by G. R. Lang, of Cincinnati, the inventor having developed it while in charge of the equipment of an important Cincinnati machinery interest. Realizing the time lost in having poorly headed bolts and the expense of keeping a variety of machines equipped with every length, he had dies made for use in the one shop. After equipping the machines with the T head shown, it was easy to supply them with studs made of

FIG. 1.—T BOLT HEAD.

round machine steel threaded at both ends in the bolt cutter. The rapidity with which studs could be made as compared with the time required to forge up heads on bolts insured the supplying of the necessary bolts when needed. The bolt heads are drop-forged, and are made strong and tough. They are turned on the under side to present a good surface to the slot. They can be placed where needed after the work is set on the machine. The slots, owing to the shape of the heads, need not be cleaned out. The heads are tapped U. S. standard threads, are case hardened, and will fit all standard slots from No. 0 milling machines to 20-ft.boring mill. In Fig. 2 the bolt heads are shown on a 72-in. planer. The bolts had to be exact length or they would strike the tool. While the work

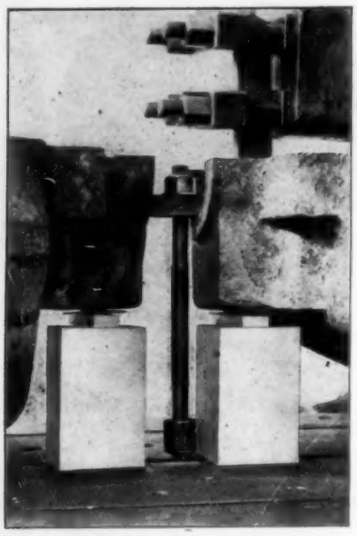

FIG. 2.—T BOLT HEAD ON 72-INCH PLANER.

was being leveled the studs were threaded and made ready for the planer, thus saving considerable time.

The manufacturers are the G. R. Lang Co., of Cincinnati.

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G. S. Rinebolt has made an offer of $5,100 for the property of the Matthews Steel Casting Co., Matthews, Ind., which is in the hands of a receiver. The offer has not been officially accepted, but it is expected that it will be and that the plant will be placed in operation by Mr. Rinebolt, who was an employe of the company for a number of years.

## JONES & LAUGHLIN STEEL CO.

The Jones & Laughlin Steel Co., Pittsburg, will increase its steel production 325,000 tons annually by the erection of four Talbot open-hearth furnaces. Castings for the vessels are already being manufactured and ground has been broken for the foundations. The furnaces will be located at the South Side plant adjacent to the Talbot furnace erected several years ago. This additional steel capacity was decided upon more than a year ago, but owing to the unfavorable market conditions the matter was deferred. The Talbot furnace now in operation at this plant is producing from 1,600 to 1,700 tons of steel weekly, and it is believed that this output can be still further increased. While smaller furnaces of the Talbot type are in operation in this country and abroad, the erection of one the size of that built by this concern was never before attempted. Some trouble was experienced in its operation, but most of the difficulties have now been overcome, and in the last six months the furnace has required few repairs. The new furnaces will increase the annual available steel capacity of the Jones & Laughlin Steel Co. from 1,275,000 tons to 1,600,000 tons. The installation of a new Bessemer converter about a year ago increased the Bessemer capacity from 600,000 tons annually to 900,000 tons. When the four Talbot furnaces are in operation the iron producing capacity will again be below the steel requirements, and the plan for erecting another blast furnace, decided upon when the present addition was made to the Eliza plant, will be carried out.

The alterations necessary for changing the four open-hearth furnaces at the company's Soho plant from acid to basic have been completed and no more acid steel is being produced at this plant. These changes give the company ten basic open-hearth furnaces with a daily output of 1,000 tons. The demand for acid steel is on the decline and the action taken by the Jones & Laughlin Steel Co. shows how strongly sentiment is changing in favor of basic steel. While the acid product continues to hold the high position it has always maintained among consumers, being preferable to basic for many purposes, steel manufacturers are unable to secure the advance in price necessary to cover the higher cost of producing this material.

The new furnace at the Eliza plant continues to operate satisfactorily with an average daily output of 450 tons. So far as this stack is concerned the ore dust problem has been solved. The other furnaces in this group are being operated so that practically no dust escapes. No definite plan of action has yet been decided upon, and whether these stacks will be reduced in height or other measures adopted for finally solving this problem, cannot be stated.

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## Transvaal Iron Industry.

The Rhodesia *Herald* states that the first blast furnace in South Africa has recently been erected near Pretoria, on the line of the railway. It is situated in the center of iron deposits and in close proximity to coal supplies. The furnace, which will have a weekly capacity of 500 tons of pig iron, is to be followed by rolling mills and a steel converting plant. The natural advantages of this enterprise seem great, remarks the *Herald*, as in addition to iron ore and coal there is plenty of limestone in the neighborhood. The ore is of the hematite and magnetite variety, and runs 58 to 62 percent of metallic iron. A survey above ground and cross-cutting indicate that there are some 62,000,000 tons of iron in sight. There is also manganese ore in Africa, and if the working of the various mines is successful there should be important economic changes.

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Tests of the improved Niclausse water tube boiler, with which the battleships Maine, Colorado, Virginia, Georgia and Pennsylvania are equipped, are being made this week at the plant of the Stirling Co., Barberton, O. Upon the result will depend the policy of the Navy Department with regard to this kind of water tube boiler. The tests are being made under the supervision of a naval board presided over by Captain J. A. B. Smith, chief engineer of the navy yards at New York.

## THE BUSINESS OUTLOOK.

The following, which we take from the *Wall Street Journal*, was written immediately for consumption among those interested particularly in the speculative outlook. However, there is in all business a certain speculative element, inasmuch as the decisions of buyers and sellers in all lines of industry and trade are based on estimates of the resultant of forces whose full effect cannot be known at the time; and the considerations presented follow lines on which the whole business community is thinking:

"With respect to the money market, it is, as everybody knows, extremely easy, with every indication that we shall get through the fall without serious stringency. The weakness of the bank position is in the fact that New York is holding this year a much larger amount of country money than usual, and the strength of the bank position is in the fact that in the event of higher rates for money the trust companies will undoubtedly relieve the banks very materially, and enable a rapid shrinkage of loan and deposit items, thus preserving a surplus even though cash runs down. Furthermore, a good deal of foreign money is likely to come into the market, in view of the high rates for exchange now ruling and the low rates at which futures can be bought for delivery in the fall. At present, therefore, the money market may be regarded as a feature of strength in the speculative situation.

"As to general business conditions, the outlook is somewhat uncertain. A great deal unquestionably depends on the crops this year. Pending the maturity of the crops, business generally, in view of the campaign, will naturaly tend to contract somewhat in the next four months. This will mean probably somewhat lower railroad earnings and bank clearings. Nevertheless, conditions are probably sound at bottom, and with the election out of the way there is nothing as yet in the situation leading one to believe that next year will not be a good year. It is, however, needless to note that agitation of the tariff question, or the success of the Democratic party with a demand for tariff reduction, would probably have a large effect on general trade.

"As regards crops prospects, the wheat crop will be short, and there will be only a moderate quantity for export next year. Corn promises very well, but the crop is yet to be made, and this is also true of cotton, though the outlook is at present very good. Happily, the country has a very fair chance of making a good harvest on the whole. Nevertheless, the crops generally are somewhat late, which, of course, means danger from early frosts, and crop scares will undoubtedly be in order.

"The principal defects in the situation as a whole are to be found in the high prices of commodities and the somewhat dislocated labor situation. Prosperity, so far as the great mass of people are concerned, depends upon steady employment and the maximum amount of commodities paid for a day's work. At present neither of these things can be said to exist in any general sense of the word. A large volume of business, however, is still being done. With respect to the purely speculative situation in Wall street, it can truthfully be said that it is vastly better than it was a year ago, inasmuch as there has been a good absorption of bonds, which has enabled syndicates to liquidate and pay off their indebtedness. Stocks are somewhat concentrated, as to ownership, in the hands of powerful speculative cliques, and so far the public has shown little disposition to come in and take them freely."

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Concerning the recent press report that the Pere Marquette and C., H. & D. consolidation had contracted with the American Car & Foundry Co. for 5,000 cars, it can be stated on authority that theses roads have arranged to place an order for at least 4,000 cars, which may be increased to 5,000 cars, besides passenger equipment.

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The Tarentum Solid Steel Tool & Forge Co., Tarentum, Pa., has elected the following board of directors: H. U. Armstrong, H. M. Brackenridge, J. D. Wilson, J. W. Hemphill, Reuben Miller Jr., and A. Hicks. No dividend was declared, but the surplus earnings were passed into the profit and loss account. About $150,000 was spent for building additions during the year.

## OBITUARY.

Charles Frederick Spang, pioneer in tube manufacture west of the Allegheny mountains, and founder of the firm of Spang, Chalfant & Co., Pittsburg, died at his home in Nice, France, on July 20, at the advanced age of 95 years. In 1858 he left this country and made his home in France, making occasional visits to Pittsburg. Mr. Spang was born in Berks county, Pennsylvania, in 1809. His father, Frederick Spang, was the owner of the Olney furnaces at Semple, Pa., one of the oldest in the United States. Mr. Spang's father removed to Huntington county where he established iron works, the old Pennsylvania canal having been opened at that time. Charles Frederick Spang accompanied his father to Huntingdon and assisted in the operation of the works. The canal made Pittsburg a market for their product and he went to Pittsburg frequently. The result was the formation of the firm of Henry S. Spang & Son and the erection of the Etna Iron Works on the site of a sickle factory that had been built in Etna, Pa., in 1827. The son, then 19 years old, became business manager and a resident of Pittsburg. On the death of Henry S. Spang the firm became Spang & Co., being composed of Charles F. Spang and James McAuley. The business was conducted under this style until 1858 when Spang, Chalfant & Co., was formed. The firm consisted of Charles H. Spang, son of Charles F.; the late John W. Chalfant, Campbell B. Herron and George A. Chalfant, at present one of the members of Spang, Chalfant & Co. In 1878 the Spang Steel & Iron Co. was formed as a branch of Spang, Chalfant & Co., with Campbell B. Herron as president, John C. Porter as treasurer and George A. Chalfant as general manager. Upon his retirement from the iron business Mr. Spang removed to Nice. He is survived by three children, Charles H. Spang of Spang, Chalfant & Co.; Norman Spang and a daughter.

A. J. Tullock, president of the Missouri Valley Bridge & Iron Works, Leavenworth, Kans., and a well known civil engineer, died at his home in Leavenworth July 21, after two years' illness.

Charles M. Joyce, formerly a well-known foundryman of Brooklyn, died in Chicago last week of paralysis.

F. W. Wigand, member of the Cooper-Wigand-Cooke Co., iron contractors, West Thirty-fourth street, New York, was stricken with heart disease in the surf at Long Beach, L. I., July 23 and died in a few minutes. Mr. Wigand was 48 years old.

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### New Ore Unloading Record.

All records for unloading ore were broken at Conneaut, O., July 25, when the cargo of 9,945 gross tons of the steamer Augustus B. Wolvin was unloaded in just four hours and a half. The work was done by four Hulett clamshells and four Brown electrically operated buckets. The four Huletts worked out 25 of the hatches, while the Browns worked out the remaining eight.

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The Union Rail Co., Huntington, W. Va., has arranged for additional capital and will add equipment for rolling brake beams, and special shapes in addition to light section rails. The low prices now prevailing on light section rails compeled this company to engage in the manufacture of shapes and bars, and this action will be followed by the Maryland Rail Co. of Cumberland, Md., which mill has been operating on light sections exclusively. The Union Rail Co. has also under consideration the erection of a 30-foot furnace for reducing heavy standard sections rerolling rails to weights of 56 and 60 pounds to the yard.

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When the Ohio works of the Carnegie Steel Co., Youngstown, O., resume next week, one of the idle stacks will be blown in. Three of the four furnaces at that plant will then be in operation. One furnace of the Carrie group of the Carnegie Steel Co. and one of the idle Edgar Thomson furnaces will be blown in next week, while the American Steel & Wire Co. is preparing to blow in its two stacks at Cleveland, which have been practically rebuilt.

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## PIG IRON PRODUCTION IN 1904.

The official figures for pig iron production in the United States in the first half of 1904 are announced by the American Iron and Steel Association, the total being 8,173,438 gross tons against 8,301,885 tons in the second half of 1903 and 9,707,367 tons in the first half of 1903. It is noteworthy that the output for the first six months of this year, which opened so inauspiciously for the iron trade, should have been but 128,000 tons less than in the second half of 1903—a year that until well into the third quarter was marked by high record production of pig iron and steel.

It is also to be noted that both in Bessemer and in basic pig iron the first half of this year exceeded the second half of 1903. The production of Bessemer pig iron in the first half of 1904 was 4,530,946 gross tons against 4,509,289 tons in the last half of 1903 and 5,480,619 tons in the first half of 1903. The production of basic pig iron in the first half of 1904 was 1,061,901 gross tons, against 836,923 tons in the last half of 1903, and 1,203,803 tons in the first half of 1903. The total increase in Bessemer and basic irons over the second half of last year is 246,635 tons, of which basic iron contributes 224,978 tons. This may indicate an increase in the proportion of pig iron and a decrease in the proportion of scrap used in the manufacture of basic open-hearth steel. The total of such steel made in the first half of this year, however, may fairly be assumed to have been less than in the second half of 1903 in view of the low demand this year for plates and structural shapes.

The production of bituminous coal and coke pig iron in the first six months of 1904 amounted to 7,337,279 gross tons, of anthracite and coke mixed to 607,624 tons, of anthracite alone to 15,179 tons, and of charcoal to 213,356 tons. Included in the bituminous figures is a small quantity of electrolytic ferro-silicon. The charcoal iron output compares with 272,040 tons in the second half and 232,717 tons in the first half of 1903. The production of spiegeleisen and ferro-manganese in the first half of 1904 was 114,205 gross tons, against 81,986 tons in the last half of 1903 and 110,675 tons in the first half of 1903. The production of ferro-manganese alone in the first half of 1904 amounted to 26,541 tons, against 14,118 tons in the last half of 1903 and 21,843 tons in the first half of that year.

The stocks which were unsold in the hands of manufacturers or their agents or were under their control in warrant yards or elsewhere on June 30, 1904, amounted to 623,254 tons, against 591,438 tons on Dec. 31, 1903, 126,301 tons on June 30, 1903, and 49,951 tons on Dec. 31, 1902. The whole number of furnaces in blast on June 30, 1904, was 216, against 182 on Dec. 31, 1903; 320 on June 30, 1903; 307 on Dec. 31, 1902 and 286 on June 30, 1902. The number of furnaces idle on June 30, 1904, was 209.

## PROTECTION AGAINST AMERICAN STEEL.

It is noteworthy that just as the new Canadian tariff regulations for the prevention of "dumping" of products from this side of the line are being put into effect, the report of the Chamberlain commission on the iron and steel trade should make its appearance in Great Britain with its recommendation of a system of tariffs. It had been expected that the Chamberlain commission would content itself with proposing some measure like that just put into effect in Canada, which should impose duties on dumped iron and steel products sufficient to make up for the cuts in prices by American and German manufacturers. Instead the commission expresses the opinion that the situation can only be remedied by a system of tariffs arranged as follows:

First—A general tariff consisting of a low scale of duties for foreign countries, admitting British wares on fair terms.

Second—A preferential tariff, lower than the general tariff, for the colonies, giving adequate preference to British manufactures, and framed to secure freer trade within the British Empire.

Third—A maximum tariff consisting of comparatively higher duties, but subject to reduction by negotiation to the level of the general tariff.

These recommendations are very general, and while they do not preclude special provisions like that in Canada, to prevent the slaughtering of prices by outside competitors sending their surplus into Great Britain, they reflect the growing sentiment among British manufacturers of iron and steel, that a complete swing from free trade to protection is demanded by the changes of recent years in the international race in iron and steel. This belief will only by strengthened by the statistics of the British foreign trade in iron and steel for the first half of 1904, showing an increase in imports—a steadily progressive movement in the past three years—and at the same time a considerable decrease in exports. However, the proposal of the iron and steel commission is far too radical a one to stand any chance in parliament. What may come is some form of protection against the dumped products of this country and Germany. And such legislation, if so made as to be practically enforceable—of which there is doubt—should not cause any dismay in the United States. For dumping, be it said, is but a badge of distress, doing little or no good to the dumper while it positively harms the dumped upon. Ample

time will elapse, before any protection legislation in Great Britain will be seriously attempted, for observing the operation of the anti-dumping measure in Canada. This, as already noted in these columns, provides as indicated in the following, which gives the substance of the measure, but does not quote from it:

That whenever it shall apear to the satisfaction of the Minister of Customs, or of any officer of customs authorized to collect customs duties, that the export price or the actual selling price to the importer in Canada of any imported dutiable article, of a class or kind made or produced in Canada, is less than the fair market value thereof, as determined according to the basis of value for duty provided in the customs act in respect of imported goods, subject to an *ad valorem* duty, such article shall, in addition to the duty otherwise established, be subject to a special duty of customs equal to the difference between such fair market value and said selling price: Provided, however, that the special customs duty of any article shall not exceed one-half of the customs duty otherwise established in respect to the article, except in regard to the articles mentioned in items 224, 226, 228, and 231 of Schedule A, the special duty of customs on which shall not exceed 15 percent *ad valorem*. The articles referred to in items 224, 226, 228, and 231 in Schedule A are: Item 224—Iron in pigs, iron kentledge and cast scrap iron, $2.50 per ton. Item 226—Iron or steel ingots, cogged ingots, blooms, slabs, billets, puddled bars and loops or other forms not otherwise provided for, less finished than iron or steel bars, but more advanced than pig iron, except castings, $2 per ton. Item 228—Rolled iron or steel angles, tees, beams, channels, joists, girders, zeds, stars, and other rolled shapes or trough, bridge, building or structural rolled sections or shapes, not punched, drilled or further manufactured than rolled, 10 percent *ad valorem*. Item 231—Rolled iron or steel plates not less than 30 in. in width and not less than ¼ in. in thickness, n. o. p., 10 percent *advalorem*.

Under this provision the duty on structural material, for example, imported from United States would be 25 percent of $32 a ton, the price now maintained by the structural pool. It is questionable if on this basis any large business could be done in Canada in competition with British manufacturers on whose products there are preferential duties. But the chances of evading the law by private arrangements and rebates, while billing the material at full prices in the United States, are to be reckoned with. Offers have already been received by Canadian houses, in which manufacturers in this country suggest that goods will be invoiced into Canada at regular prices, but Canadian dealers will be paid salaries for handling the goods. On the other hand, if the new law can be strictly enforced it promises to give the iron and steel trade of Canada long-sought relief from the practical control in some lines of products exercised by foreign iron and steel manufacturers.

The significant feature of these Canadian and British attempts to cure trade evils is that international movements in iron and steel are to assume increasing importance. If tariff changes come in the United States, as they are very apt to come in the course of time, there will be more reason why international agreements as to their foreign trade should appeal to iron and steel manufacturers of the United States, Germany and Great Britain, than seems at all probable today.

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Interesting data have just appeared concerning the foreign iron and steel trade of Great Britain and Germany this year. Great Britain, according to official figures, increased her imports of steel from 552,299 tons in the first half of 1902 and 591,994 tons in the first half of 1903 to 660,505 tons in the six months ending June 30 of this year. The increase in unwrought steel alone was 178,588 tons over 1903, cheap steel from the United States contributing largely; and had not imports of bars and angles declined 90,000 tons, the showing for the six months would have been most disheartening to British manufacturers. The export showing is also unfavorable, the total of iron and steel sent out of the country this year to June 30 being 1,635,057 tons, against 1,874,153 tons last year to the same date. For the first half of 1902 the figures are 1,516,598. The loss of the trade built up in the States in the boom here is the chief explanation of the change, pig iron shipments from Great Britain to this country in the first half of 1903 being 260,812 tons as against only 27,796 tons in the first half of this year. Germany also misses the good buying of the United States in 1902 and 1903. For the first four months of 1904, German exports of iron and steel were 275,262 tons, or 29 percent less than in the first four months of 1903. Pig iron fell off 98,000 tons, steel 93,000 tons and rails and sleepers 66,000 tons.

## STEEL CORPORATION MEETING.

The quarterly meeting of the directors of the United States Steel Corporation was held in New York July 26. The dividend of 1¾ percent on the preferred stock was declared. This dividend is payable on Aug. 30. Books close Aug. 6 and reopen Aug. 31. Thomas Morrison, of Pittsburg, Andrwe Carnegie's nephew, was elected a director to succeed Charles M. Schwab, resigned.

Among the directors present were J. P. Morgan, John D. Rockefeller, Jr., W. E. Corey, G. W. Perkins, James Gayley, John F. Dryden and E. C. Converse. G. W. Perkins presided. President Corey made a statement regarding his recent conference at Pittsburg with the presidents of subsidiary companies. He said that the presidents of the subsidiary companies had reduced operating forces to a minimum to realize practically in the pay roll the benefits of reduced consumption. The current demands, while better and calling for more output at many places, did not appear to the subsidiaries as substantial. They expect to see a further slackening in August, although they think the present quarter will be profitable. The report for the last quarter follows:

| | |
|---|---|
| *Net | $19,490,725 |
| Sinking funds on bonds of sub-companies | 469,425 |
| Balance | $19,021,300 |
| Depreciation and reserve funds | 3,059,062 |
| Balance | $15,962,238 |
| Interest and sinking funds on United States Steel Co. bonds | 6,879,675 |
| Balance | $ 9,082,563 |
| Preferred dividends | 6,304,919 |
| Surplus | $ 2,777,644 |

*After deducting ordinary expenditures for renewals, repairs, maintenances, interest, fixed charges, etc.

Net earnings by months for the first half of the year compare as follows:

| | 1904 | 1903 |
|---|---|---|
| January | $2,868,213 | $ 7,425,775 |
| February | 4,540,673 | 7,730,361 |
| March | 5,500,000 | 9,912,571 |
| April | 6,863,833 | 10,950,204 |
| May | 6,256,518 | 12,744,324 |
| June | 6,370,374 | 12,992,780 |

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The continuous mill of the Belmont plant of the Wheeling Steel & Iron Co., Wheeling, W. Va., is idle owing to a break down of the new engine recently installed.

# The Labor Situation.

### TIN PLATE SCALE ADJUSTED.

The tin plate scale for the ensuing year has been finally adjusted by a settlement of the rebate question with the American Sheet & Tin Plate Co. Conferences between the officials of that company and the Amalgamated Association held last week terminated on Saturday night. The workers succeeded in securing a concession from the company, the reduction on rebate plate being cut in two. The new agreement provides for the production of this plate at a reduction of 12½ percent below the regular tin plate wage scale. Since this scheme became operative the company secured a concession of 25 percent. Hereafter, instead of collecting 3 percent from the wages of the tin plate workers to make up for this reduction on the rebate plate, only 1½ percent will be deducted. The agreement dates back to July 1. Practically all of the independent sheet and tin plate manufacturers have already signed the Amalgamated scales for the ensuing year, and the trouble that was anticipated several weeks ago is averted. Within the past week the following manufacturers have signed the sheet or tin plate scale: Alcania Co., Avonmore, Pa.; Youngstown Iron & Steel Roofing Co., Youngstown, O.; American Rolling Mill Co., Middletown, O.; Youngstown Iron Sheet & Tube Co., Youngstown, O.; Niles Iron & Steel Co., and the Empire Iron & Steel Co., Niles, O.

Other concerns have signed the union scale as follows: Sligo Iron & Steel Co., Connellsville, Pa.; Weller Rolling Mill Co., Anniston, Ala.; Colonial Steel Co., Monaca, Pa.; Pittsburg Forge & Iron Co., Allegheny, Pa.; Ewald Iron Co., Louisville, Ky.; Westerman & Co., Lockport, N. Y.

The scale of the tin house workers affiliated with the Tin Workers' International Protective Association was adjusted last week. The new scale went into effect July 20 and will remain in force until July 15, 1905. The workers' representatives accepted a reduction of 5 percent or terne dippers; 3 percent for terne catchers; 5 percent for combination terne dippers; 3 percent for combination terne catchers and 3 percent for all other tinhouse employes outside dippers and catchers who are making $1.60 a day or over. A few minor changes were made in prices on special machines and footnotes that do not materially affect the earning power of the workers.

As a result of the settlement of the scale the American Sheet & Tin Plate Co. is preparing to place a large number of idle mills in operation. At New Castle the Greer and Shenango plants containing 50 mills will resume next week. At Elwood, Ind., twenty mills are in operation and the remainder will go on as soon as necessary repairs can be completed. At Gas City and Anderson, Ind., all of the mills of the company are operating in full.

### PITTSBURG FOUNDRY SITUATION.

All of the foundries in the Pittsburg district affiliated with the Manufacturers' Association of Pittsburg are operating without any agreement with their molders. The wages of all the molders have been reduced to $3 per day, the minimum which has obtained in the Pittsburg district for several years and in a few foundries still greater reductions have been made. The molders in the latter shops threaten to strike, but as yet they are continuing to work. The molders have presented agreements to the foundrymen but none of the latter have signed and none intend to. While the shops are practically open, this question has not yet come to a final test by the employment of non-union help, but it is probable that the issue will arise in the near future, seeing that all the shops are operating without an agreement.

The Pittsburg Steel Foundry at Glassport is now running as full as at any time within the past three months, little trouble being found in securing men to take the places of those that walked out. The fight for an open shop at this plant has been practically won. At the plant of the Sterling Steel Foundry, Braddock, the open shop is also being contended for and the prospect is bright for a successful outcome.

### BAR IRON AND HOOP MILL SCALES.

H. W. Heedy, of Youngstown, has been appointed the representative of the Republic Iron & Steel Co. on the board of conciliation of three to adjust the bar iron scale. The Amalgamated Association is having considerable trouble in securing a representative, the three selected in the past four weeks having refused the appointment after due consideration. M. M. Garland, of Pittsburg, formerly president of the association, was the first to refuse, and their next selection, J. H. Morgan, also refused the appointment. John J. Buckley, of Youngstown, formerly one of the vice presidents of the association, who was next tendered the appointment, announced this week that he would not serve. As yet the association has made no further selection. The officials of the Republic Iron & Steel Co. are anxious to have this matter settled within the next few weeks.

Meetings have been held at Youngstown, O., in the past week between the various crews employed at the mills of the American Steel Hoop department of the Carnegie Steel Co. and the company officials for the purpose of attempting to agree on a new scale for the ensuing year. No agreement could be reached with the officials of the Amalgamated Association at the recent conferences, and the men are conferring with their employers directly. A big cut in the wages is proposed, but the men refuse to accept it. No attempt has yet been made to operate the plants.

### MILLS LOST TO UNIONISM.

In a recent issue of the *Amalgamated Journal*, the official organ of the Amalgamated Association of Iron and Steel Workers, strikes are reported on at the following plants: Tennessee Coal, Iron & Railroad Co., Bessemer, Ala.; Harrisburg, Milton and Fort Washington, Pa.; Spang, Chalfant & Co., Pittsburg; Continental plant, National Tube Co., Pittsburg; Canonsburg Iron & Steel Co., Canonsburg, Pa.; Parkersburg Iron & Steel Co., Parkersburg, W. Va.; Muskingum Valley Iron & Steel Co., Zanesville, O.; McKeesport Tin Plate Co., McKeesport, Pa.; Stark Rolling Mill Co., Canton, O. With the exception of the strikes at Bessemer, Ala., and Harrisburg, Fort Washington and Milton, Pa., the contentions are no longer a factor in preventing the operations of the remaining plants. Practically all of the other strikes enumerated have been lost by the association from six months to a year ago, and even the association, beyond cautioning iron workers to remain away from these plants, considers the causes as lost.

### "OPEN SHOP" IN WORCESTER FOUNDRIES.

As a result of the strike in Worcester, Mass., foundries, the open shop policy is to be enforced in that city. A general reduction of 25 cents a day was made and the molders struck. Thereupon the Reed Foundry Co., the Kabley Foundry Co., the L. W. Pond Machine & Foundry Co., James A. Colvin and the Wheeler Foundry Co., determined to apply the open shop rule to their foundries. Notices have been posted in these foundries as follows:

1. Management.—Inasmuch as we, the employers, are responsible for the work done in our shops, we therefore must determine what persons are competent to perform the work and the conditions under which the work shall be done. We will not admit of any interference with the management of our business or with the method of production of our shops.

2. Strikes and Lockouts.—The members of this association disapprove of strikes and lockouts.

3. Apprentices, Helpers and Handymen.—The number of apprentices, helpers and handymen to be employed will be determined solely by the employer.

4. Wages.—Workmen will be hired by the hourly rate, by premium system, by piece work or by contract, as the employer shall elect, and shall be paid such wages as shall be agreed upon between the workman and the employer. A fair day's work will be required of every person so employed. Every man who elects to work in our shops will be required

to work peaceably and harmoniously with all his fellow employes.

5. Freedom of Choice.—It is the privilege of the workman to leave our employ whenever he chooses; and it is the privilege of the employer to discharge any workman whenever he sees fit.

6. Arbitration.—The above principles are essential to the successful conduct of our business and are not subject to arbitration.

## CHICAGO MACHINISTS' STRIKE ABOUT OVER.

Chicago, July 26.—From the headquarters of the National Metal Trades Association the following statement is given out relative to the machinists' strike:

"The strike started by the International Association of Machinists on or about the nrst of June, is to all intents and purposes over so far as the replacing of the strikers is concerned. Eleven members of the National Metal Trades Association were affected. In order to handle the situation most effectively, a temporary office was opened in Chicago, through which men have been brought from all parts of the country, many coming from New York and the New England States and some from as far distant points as San Francisco. These men were selected solely with a view to their competency, the purpose being to secure men to fill permanently the places vacated by the strikers, and not merely to supply such places until members of the union saw fit to resume work. This action was taken because no more unjust, unwarranted strike was ever declared by the International Association of Machinists.

"The efficiency of the men working in many of the shops has astonished our members. This is due directly to the removal of the restrictions and limitations which have been placed upon the output of the shops of this city by the machinists' union. The minimum wage scale, the classification of machinists, the limitation of apprentices, the inability to have one man operate more than one machine and the general domination of the machinists' union, had effectively prevented the securing of anything like the maximum output from the machine shops of this city. With these restrictions removed, these shops are being brought to a plane of efficiency which will compare favorably with that of shops in other machinery centers which have not suffered to such a great extent from union control. Notwithstanding the fact that several of our shops have been equipped with entirely new crews of men ignorant of the shop detail and routine, the production per operative is already far in excess of that obtained under the old system.

"Picketing is still being continued about the plants of several members, but, by reason of effective injunctions and vigorous prosecutions for violation of the law, this picketing is of such character as not to interfere in the slightest degree with the operation of the shops. Very few vacancies now remain to be filled and so far as the National Metal Trades Association is concerned the Chivago strike of 1904 will soon be a closed incident."

## NATIONAL METAL TRADES ASSOCIATION.

CINCINNATI, July 26.—The condition of the strike in New York among the boiler makers has changed materially during the week. Such of the strikers as were needed have returned to work in the several shops. The employers made no agreement either written or verbal with the strikers other than to say they would hire such of them as they would need. Out of the large number of men that struck from the shops of Theo. Smith & Son, there were places for only five, and these went to work.

General conditions at Pittsburg have not changed any during the week. Some of the foundries in making the recent reduction, put some of their men below $3, and the Iron Molders' Union has threatened officially through its business agent and vice president to strike these shops if the minimum is not restored. There is as yet no strike in any of the shops. but the issue will probably come to a head next week.

The N. M. T. A. has issued a letter wherein it states that it has practically filled all the places of the machinists on strike from the shops of the Chicago members, and that applications will be considered only from machinists of exceptional ability to fill particular jobs.

The New York Metal Trades Association has issued the following shop rules:

1. Employment of Workmen—Open-shop policy and principle shall prevail in all departments of this plant. Every workman who elects to work in this plant will be required to work peaceably and harmoniously with all his fellow employes.

2. Payment of Workmen—(a) When a workman is discharged or laid off he shall be paid without unreasonable delay. (b) When a workman leaves of his own accord he will receive the pay due him at the next regular pay day.

3. Workmen in Gangs—The proprietor shall determine, without interference from any workman, the manner in which journeymen, helpers and apprentices shall be distributed in gangs.

4. Car Fares and Ferriages—(a) Necessary car fares and ferriages shall be paid a workman when he is sent from plant to job. To a workman going directly from his residence to job away from plant, without going to plant, the proprietor will pay in car fares and ferriages an amount equal to the excess over what such workman is required to pay when he is regularly employed in the plant. This provision shall apply to workmen regularly employed at the plant. (b) A workman hired at the job shall be required to pay his own car fare.

5. General Rules—(a) There shall be no restriction or discrimination on the part of a workman as to the handling of any materials entering into the construction of the work upon which he is employed. (b) There shall be no limitation placed upon the amount of work to be performed by a workman during working hours. (c) There shall be no restriction as to the use of machinery or tools or as to the number of men employed in the operation of the same. (d) No persons other than those authorized by the employer shall converse or otherwise interfere with workmen during working hours.

## LABOR NOTES.

Forty molders employed at the Wilkes Foundry, Toledo, have gone on a strike because of a distgreement regarding work, and the discharge of certain union molders.

The Krein Chain Works, Marion, Ind., are again closed down. The men quit work owing to the fact that the company had refused to sign the scale. It is not believed that the plant will long be idle.

As anticipated last week the strike at the plant of the Dominion Iron & Steel Co., which was closed on June 1, has ended in a complete victory for the company. A large majority of the former employes were taken back.

About 150 boilermakers, who went on strike sometime ago in Jersey City, returned to work July 20. All the men at the shops of Thatcher & Co., of Hoboken, Theodore Smith & Sons, the Reilly Repair & Supply Co. and the Miller shop went back. All the shops at which the strikes occurred will remain open.

The representatives of the molders and founders who have been conferring on the strike at Montreal have failed to come to an agreement and all negotiations have been discontinued.

The Standard Chain Co. has come to an agreement with its employes and work has been resumed in eleven of its thirteen plants.

The puddlers employed by Spang, Chalfant & Co., Pittsburg, went on a strike last week on account of a reduction in wages. The men want $5 a ton, while the company only offers $4.50.

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Bids were opened at the Navy Department July 22 for gun forgings for several battleships and cruisers. The Bethlehem and Midvale Steel companies were the only bidders, each bidding 30 cents a pound.

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At the annual meeting of the Youngstown Iron & Steel Roofing Co., Youngstown, O., the following directors were elected: L. E. Cochran, Henry W. Heedy, Mason Evans, G. M. McKelvey and John O. Pew. The mill is in full operation and has enough orders to keep it busy all summer and fall.

## TRADE PUBLICATIONS.

A discourse on the application of the Golden Rule to the affairs of life has a conspicuous place in the new catalogue issued by the S. M. Jones Co., of Toledo, O., of which the late Mayor Jones was president. In an introductory chapter on the gas engine it is stated that the final object of all effort is the production of a better and ever better kind of man and woman, a better average manhood. "No matter whether you believe this or not," says the writer, "you are probably an unconscious factor playing your part in this great drama. You can't do much good of any kind for yourself, even from the most selfish point of view, except as you do some good for your fellow man. * * * You will certainly fail, unless your business or enterprise is of such a kind that it is in some way a benefit to the community and the world of which you are a part and to which you look for patronage and support. * * * The gas engine is working, yes, indeed, has already worked, a revolution in the world of industry. It is the most human, and, we say it reverently, the most God-like, because the cleanest thing in the way of an artificial power producer yet known to modern science." Following the ethical observations, descriptions are given of the Acme gas and gasoline engines manufactured by this company.

The Northern Electrical Mfg. Co., Madison, Wis., has issued leaflets Nos. 131 and 133, describing motors in metal working, operating foundry equipment and in blowing and ventilating service, operating blowers and fans.

Emery and corundum wheels are manufactured of many different numbers or sizes of grain, and also many degrees of hardness to meet the great variety of conditions under which they are used. Explanations of numbers of emery and grades of wheels is given in a leaflet published by the Star Emery & Corundum Co., of Detroit.

A little book, which will be of interest to owners of steam plants, is published by Warren, Webster & Co., Camden, N. J., which describes the merits of the Webster "Star Vacuum" feed-water heater and purifier.

The F. E. Reed Co., Worcester, Mass., has issued a new illustrated catalogue of lathes and other machine tools which it manufactures. Special attention has been paid to the cuts, which are engraved from prints made from photograph negatives upon the boxwood, and are true representations of the various machines as they are now made.

Portable drilling machines and boiler shell drills are described in the new catalogue issued by the Thos. H. Dallett Co., Philadelphia. Prices and all other necessary information are given. The catalogue is elaborately illustrated.

It has been the practice of wood split pulley manufacturers to publish small catalogues or booklets describing their production. The Reeves Pulley Co., Columbus, Indiana, has published a more pretentions catalogue describing its pulleys fully, with illustrations, and giving considerable valuable information.

Catalogue No. 10 of the Southern Stove Works, Richmond, Va., is illustrative and descriptive of the stoves and ranges manufactured by that company. Directions for operating stoves are among the features of this publication.

The Hoggson & Pettis Mfg. Co., New Haven, Conn., has issued an illustrated catalogue of the Sweetland chuck. Instructions for the mounting and care of chucks are given.

"The Cockerill Gas Engine" is the subject of an unusually well printed announcement catalogue of the Wellman-Seaver-Morgan Co., of Cleveland. In this publication the company brings formally before the users of large power units this engine that has made so creditable a record in Europe. The pamphlet describes the construction and operation of the engine in a general way and presents two illustrations, one the Cockerill blast furnace gas blowing engine and the other a sectional view of the valve gear. The Cockerill engine is of the well known four-cycle type in which only one impulse caused by the combustion of the gas mixture takes place during one stroke of the complete cycle or in two revolutions. The gas mixture is drawn in during the forward stroke, compressed during the return stroke, exploded in the third stroke and exhausted in the return stroke. This action takes place on each side of the piston, the cylinders being built double acting. A list is given of Cockerill installations at various iron and steel plants in Europe representing 121 engines with a total of nearly 80,000 h. p. in units of from 800 to 3,000 h. p.

The Foos Gas Engine Co., of Springfield, O., has issued a circular which is well packed with the salient facts relative to the merits of the Foos engine. It is entitled "Points of Advantage." It constitutes a complete specification sheet and in this respect is a unique publication.

A catalogue of unusual typographic excellence is issued by the Cleveland Twist Drill Co. It is standard size and illustrated with special attractiveness. In its preface the company calls attention to its expert inspection of each tool after every operation. Micrometer calipers are used throughout the factory, and it is suggested that orders for special tools give fractional sizes in thousandths of an inch. The catalogue is an illustration of the proportions to which the manufacture of twist drills, reamers, taps, mills and cutters has grown. Special attention is called to the demand among users of turret lathes and screw machines for tools in sets of uniform diameter of shanks and uniform length—tools that would usually be required in the turret head to complete a given pieces of work at one setting. Illustrations are given of the various styles of these tools which the company makes and carries in stock, these being both short and long sets.

Catalogue No. 5 of the Duluth Corrugating Roofing Co., Duluth, Minn., is devoted to an industry of which little was heard not many years ago. The variety of patterns and the artistic character of the designs now offered in metal ceilings, cornices, wainscoting and side wall is a revelation. The Duluth Corrugating & Roofing Co. has brought this industry to a high development in the Northwest, and its factory is the only one of its kind in that territory.

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### Youngstown Iron Steel & Tube Co.

At the annual meeting of the stockholders and directors of the Youngstown Iron Sheet & Tube Co., held at Youngstown, July 26, James A. Campbell, vice president and general manager, was elected president to succeed George D. Wick, who resigned about two years ago. H. G. Dalton, of Cleveland, was selected as vice president, Richard Garlick as treasurer and George E. Day as secretary. The directors selected were: H. G. Dalton and John L. Severance, of Cleveland; Robert Bentley, H. H. Stambaugh, George D. Wick, J. G. Butler Jr., Richard Garlick, C. D. Hine, E. L. Ford and James A. Campbell. The amount of the sales of the company for the past year were more than $5,100,000 and the pay roll more than $1,100,000. Plans are under way for the installation of a 16-inch tube mill, which, it is expected, will be in operation in four months.

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The power canal of the Niagara County Irrigation & Water Supply Co., which is to construct a 150,000 h. p. generating plant at "Devil's Hole," below Niagara Falls, is to be built by the Frontier Construction Co., of New York, to which the contract has been awarded. The construction company has been incorporated with a capitalization of $500,000. The incorporators are: E. K. Wilcox, Cleveland; Uriah Cummings, Akron; J. S. Williams, Glastonburg, Ct.; Thomas W. Lillie and E. H. Potter, New York.

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At a conference held a few days ago in Spring Lake, N. J., between the committees appointed by the Pittsburg Stock and the New York Produce exchanges for the purpose of formulating uniform conditions for transactions in pig iron warrants on the two exchanges, it was decided to postpone action concerning the harmonizing until it can be demonstrated by experience whether preference should be given to the Pittsburg or the New York system.

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The King Bridge Co., Cleveland, a few days ago shipped 36 carloads of bridge material to be used in the construction of the bridge to be built by the Chicago, Burlington & Quincy railroad across the St. Croix river at Prescott, Wis. The material was shipped over the Pennsylvania railroad.

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The Logan Mfg. Co., Phœnixville, Pa., has made an assignment to Joseph R. Embery, at whose office in the Real Estate Trust building, Philadelphia, a meeting of the creditors will be held Aug. 9.

## OUR FOREIGN TRADE FOR THE PAST YEAR.

It is somewhat surprising, in view of the decrease in the value of the exports of breadstuffs, that the volume of the merchandise of foreign trade for the year ending June 30, 1904, should have been the greatest in the history of the country. The falling off in the excess of merchandise exports has not been accompanied by any actual decline in the total volume of the foreign trade, but in an increase of $4,756,000. The merchandise exports and imports and the totals for the year ending June 30 for six years have been as follows:

| | Exports | Imports. | Total. |
|---|---|---|---|
| 1899 | $1,227,023,000 | $ 697,148,000 | $1,924,171,000 |
| 1900 | 1,394,483,000 | 849,941,000 | 2,244,424,000 |
| 1901 | 1,487,765,000 | 823,172,000 | 2,310,937,000 |
| 1902 | 1,381,719,000 | 903,321,000 | 2,284,040,000 |
| 1903 | 1,420,141,000 | 1,025,719,000 | 2,446,548,000 |
| 1904 | 1,460,829,000 | 990,745,000 | 2,451,304,000 |

In the last six months of the fiscal year ending June 30, 1904, there was a decline in the volume of the merchandise of foreign trade, but it was not extremely important, as a comparison with the previous years for that period will show. The merchandise of foreign trade for six months ending June 30 for six years was:

| | Exports | Imports. | Total. |
|---|---|---|---|
| 1899 | $ 593,019,000 | $ 388,445,000 | $ 981,464,000 |
| 1900 | 712,034,000 | 439,419,000 | 1,151,443,000 |
| 1901 | 721,853,000 | 443,431,000 | 1,154,874,000 |
| 1902 | 638,196,000 | 456,342,000 | 1,094,538,000 |
| 1903 | 697,652,000 | 512,745,000 | 1,210,397,000 |
| 1904 | 673,728,000 | 447,995,000 | 1,121,723,000 |

Including gold and silver, the result of the foreign trade for the year ending June 30, 1904, was as follows:

| | |
|---|---|
| Excess of merchandise and silver exports | $491,868,000 |
| Excess of imports of gold | 17,535,000 |
| Total excess of exports | $474,333,000 |

This sum, which is the balance of trade on the visible items, compares with the excess of exports in former years, as follows:

| | Excess merchandise. | Excess mer. gold and silver. |
|---|---|---|
| 1904 | $470,084,000 | $474,333,000 |
| 1903 | 394,422,000 | 416,618,000 |
| 1902 | 478,398,000 | 495,446,000 |
| 1901 | 664,593,000 | 670,632,000 |
| 1900 | 544,542,000 | 569,692,000 |
| 1899 | 529,875,000 | 504,086,000 |

These figures indicate a high state of prosperity in the foreign trade, though some falling off in the net balance this year as compared with the foremost favorable years.

## British Iron Ore Output and Consumption.

The report of iron ore production in Great Britain in 1903 has been published and shows a slight increase over 1902, the totals being 13,715,645 and 13,204,273 tons, respectively. In spite of last year's increase of 511,372 tons over 1902, the total was less than for 1900. The total supplies of iron ore reported in the two years were as follows:

| | 1902. | 1903. | Changes. |
|---|---|---|---|
| Ore mined | 13,204,273 | 13,715,645 | I. 511,372 |
| Ore imported | 6,454,757 | 6,251,078 | D. 203,679 |
| Total | 19,659,030 | 19,966,723 | I. 307,693 |

Taking the total production of pig iron in Great Britain last year and assuming that there was no accumulation of stocks, this would show an average consumption of 2.26 tons of ore per ton of iron made; or an average yield from the ore of 44.1 percent iron.

## New Seamless Tube Company.

The Seamless Tube Co. of America has opened offices in the Frick Building, Pittsburg, and has plans in preparation for the erection of a plant 100 x 600 feet. A 10-acre tract at Monessen has been laid out for the erection of three additional buildings of the same size for future requirements. Seamless tubing will be manufactured by the Briede process. The tubing is hot drawn with the initial heat. The new plant is to be placed in operation about the first of the year. Its output will be limited almost entirely to boiler tubes at the beginning. It is claimed, but the claim is questioned, that tubes made by this process can be sold in competition with lap weld product. Interests connected with the Pittsburg Steel Co. are backing the venture.

## Little Profit in Iron Ores this Year.

Two years ago, when negotiations were pending for the sale of what are known as Hill lands on the Mesabi iron range, it was given out that Mr. Hill based his selling price on a valuation of $1 per ton for iron ore in the ground. Even in the boom times, that looked like a high price; at present, it looks much higher. Mesabi Bessemer ores are selling this season at $3 per ton at Lake Erie docks, while Mesabi non-Bessemers have sold as low as $2.40. From these prices are to be deducted the lake freight of 70 cents, dock charges and the rail freight from the mine to Duluth or Superior, so that the operator does not receive over $1.30 to $1.35 for Bessemer ores, and 70 to 75 cents for non-Bessemers, out of which must come the cost of mining. As nearly all Mesabi mines are charged with royalties varying from 25 to 50 cents per ton to the fee-owners, the margin for profit to operators who sell their ore does not look large.—[Engineering and Mining Journal.

## Workings of the German Steel Syndicate.

A Düsseldorf correspondent writes as follows upon the operations of the German steel syndicate:

"It is understood that the establishment of the steel syndicate has not had any lasting effect upon prices for the export market. The improvement in prices which took place two or three months ago has proved to be merely of a temporary character, as quotations have already receded. It is possible that the decline in the exports may to some extent be responsible for the fall in export prices. In the meantime, attention may be drawn to the attitude of the steel syndicate towards the Westphalian Steel Works Co., of Bochum, which will be remembered as having refused to join the combination, and is, in fact, outside of it today. The company recently underbid the syndicate in regard to the supply of rails for the state lines, but the syndicate, which is understood to be regarded with favor in government circles, is said to have actually arrived at an understanding with the Prussian State railway authorities in respect of the quantity of rails to be ordered from the Westphalian Steel Works Co. There is nothing improbable in this reported action between government officials and the combination. What is remarkable is that the syndicate has not started a war of prices against the company, as, indeed, it theatened to do in the case of the Phœnix Steel Works. The management of the syndicate, however, deemed it inadvisable to saddle upon the members the expenses of a price war, and to disturb the whole of the market. Hence the friendly arrangement between state officials and the syndicate, independently of the company. It is a pretty story, and highly probable. If absolutely true, the conclusion can only be drawn that the shareholders of the Phœenix Steel Works Co. were bluffed into forcing the directors to associate that undertaking with the syndicate, for if a price war was really comtenplated against the Phœnix Works for refusing to join, it would also be waged against the Westphalian company. But as this is not the case, it looks as if the Phœnix shareholders were coerced, and that the directors were right after all."

The H. Wetter Mfg. Co., South Pittsburg, Tenn., has leased for a term of years the building formerly occupied by the Sequatchie Hoe & Tool Works. The company will manufacture stoves in the leased building, and will give employment to fifty additional men.

A plan is being worked upon to bring into one syndicate the three separate organizations in the German wire trade—the wire rod syndicate, the drawn wire pool and the wire nail syndicate.

The Shenango tin mill of the American Sheet & Tin Plate Co., New Castle, Pa., resumed operations this week after an idleness of three weeks. The Greer plant at that place will resume next week.

## BRITISH RAILWAY METHODS.

Not only does each British railway have its own monopoly, but the united railways also form a close corporation which governs almost all the inland traffic of the country, the constituent members of which never compete in the matter of charges with one another, and it has been urged that they should further cement that close corporation by a conference to make arrangements in the direction of economy of working in various ways. So long as each railway has its own separate existence, direction, finance, accounts, and dividends, it must, we imagine, continue to work separately so far as these are concerned; and we fear it is hardly likely that much economy in working would result from a further strentghening of the present system by inter-railway arrangements; at any rate, the public, for whose benefit, after all, railways were authorized, would not benefit by such economy. But as a fact, the railways make revenue out of their partially independent position in working. For traffic passing over more than one company's line, each company, so far as possible (and in opposition to express promises), charges its own maximum rates, or as near to them as it can. Thus, two, three, four, and more initial mileage charges are levied on such traffic, instead of one. Is it likely that the railways would initiate any saving, such as through-trains and wagon loads, as has been suggested, seeing that the trader, and not the railway, has a right to claim such saving? The railways, after all, pay a living interest or dividend, even upon their inflated capital. Were their privileges granted them for the benefit of the speculators who originally built them, or amalgamated them, or even for the benefit of investors in what has become a handy security? There would, indeed, be a great saving were railway management and working consolidated. Such benefit, however, if it led merely to increased dividends, would almost be an insult to over-taxed trade. A saving for the benefit of that trade is not to be looked for under the present system.

We write in no hostile spirit to the railways; they are rather the victims of circumstances than culprits, except in the matter of the absurd secrecy they continue to maintain concerning their doings. One example is that of statistics and finance, which have always, as well as matters of charges, been kept secret as far as possible. An iron manufacturer divides his expenses in detail between blast furnaces, engines, boilers, machinery, rolling and other mills, foundries, etc., even to the abstracting of each laborer's daily wage under its proper head or heads; a shipping company shows the profit (or loss) of each vessel on each voyage. The railways do not even divide expenses between mineral traffic and ordinary goods traffic, for when such a division was required in the heavy coal cases which followed the weight alteration, they had to make the roughest guess at it, Mr. Turners and Sir H. Oakley saying merely that they estimated the cost of dealing with mineral traffic at half that of other traffic; and millions of pounds were treated on that basis in the accounts provided for the railway and canal commissioners.

In one sense what is wanted is not more, but less, co-operation between railway companies; less co-operation in making conference freight rates and in assisting by the whole strength of the railway combination any railway finding itself in conflict with traders or bodies of traders. The present combination is a law to itself, and cares for no other law, and the bonds by which it is held together require loosening, or the whole thing putting into other hands. For many reasons, carriers by rail will not look with unmixed approval upon the suggestion of railway investors that the present informal if not illegal entente amongst the companies should be further strengthened.—[London Iron and Coal Trades Review.

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The offices of Templeton, Kenly & Co., Ltd., The Rookery, Chicago, have been consolidated with the shops and warehouse at 33-37 East Ontario street, Chicago. The firm manufactures Simplex car jacks and deals in light section rails and track supplies.

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Wm. H. Armstrong, formerly manager of the New York business for the Chicago Pneumatic Tool Co., is now associated with the Ingersoll-Sergeant Drill Co. of 26 Cortlandt street, New York, and will look after the interests of the pneumatic tool department.

## EASTERN PENNSYLVANIA.

HARRISBURG, Pa., July 26.—The end of July will find conditions in the valleys of Eastern Pennsylvania much as they were at this time last month. Mills and furnaces are either running on reduced time or are idle awaiting the coming of the better time, which everyone expects this fall. Occasionally orders come in which allow of starting of a plant on double turn, but these are infrequent.

In the lower Susquehanna valley the conditions are not very bright. The works about Harrisburg, Lebanon, Lancaster and York are running on only fair time. In this city and Steelton the same scale of operations as in June is followed. No additional mills have been started and no one will predict livelier times. However, improvements are being carried forward, and when the start does come there will be larger capacity. The Pennsylvania Steel Co. is not making its output anything remarkable, and there are frequent stoppages of the Bessemer and rail mills and slack times in the big frog department.

Lebanon mills continue to be running about the same and there is little doing among the furnaces.

The McClintic-Marshall Co. will build a large addition and office building at Pottstown.

The works of the National Tube Co. at Middletown and the Middletown Car Works will be started in August after several weeks' suspension, according to statements made at the works.

The Girard Iron & Steel Co. of Philadelphia has been chartered at Capitol Hill with a capital of $25,000.

The Reading Hardware Works recently made a notable shipment of lawn-mowers for South Africa. It has made a large number of exports of late.

W. P. Potts, Son & Co. of Philadelphia, to deal in iron and steel, have been incorporated with a capital of $200,000.

The Cambria Steel Co. has started its works at Johnstown on almost full time.

The Rebecca furnace at Kittanning has suspended operations for the present.

The Commonwealth of Pennsylvania has awarded several bridge contracts to replace structures destroyed during the recent floods. The Pennsylvania Steel Co. will build the Bradford bridge for $140,000; the King Bridge Co. of Cleveland, the Danville bridge for $130,000, and the Penn Bridge Co. of Beaver Falls, several smaller bridges at a total cost of about $130,000. The state will award additional contracts in August and September.

There will be sales of several mills and other iron works properties about Pottstown shortly. It is hinted that dissolution will take place in several firms.

The Penn Iron Works at Lancaster have resumed, employing 300 men.

Affairs at Reading and Allentown are reported about the same as on July 1. Works are making only fair time and not many additional furnaces have started up. The Bethlehem Steel Co. has been making good sized shipments of armor, 250 tons being shipped recently.

The Hecksher furnaces at Swedeland have been making large outputs. Not long ago the record was broken for these stacks.

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### Molybdenum in New Jersey Iron Ores.

The report of the state geologist of New Jersey says: "Molybdenite is found desseminated through the iron ore from the Hude mine at Stanhope, and is frequently found altered to canary-yellow and orange coatings of molybdite, and possibly ilsemannite. The hornblende, where exposed to the weather, has altered to a golden vermiculite, which might be referred to the vermiculite derived from hornblende and described by Lewis as philadelphite. The Hude ore, like that at Oxford furnace, is a close-grained magnetite, with massive pyrite through it. The magnetite is often found here with slicken-sided surfaces, so that it resembles a natural mirror. Such a specimen, weighing about 150 pounds, is in the State Museum at Trenton."

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The Blue Mountain Iron & Steel Co., Frederick, Md., has been declared bankrupt and it is expected that trustees will be appointed and the property, consisting of the Catoctin furnace and several pieces of real estate, will be sold for the benefit of the creditors.

## LAKE SUPERIOR IRON MINES.

About 2,000 tons daily of iron ore is coming off state lands in Minnesota, all on Mesabi range, and all from Grant mine, belonging to Jones & Laughlins, and the Pool mine belonging to the Steel Corporation. This is a small amount, but with the exception of a little to come from Oliver later in the year, and from Frantz when it begins shipping, it is all that will come off state lands this year.

Reference has been made frequently to the iron ore interests of the state of Minnesota on lands that are owned by the state in fee. These lands have never been fully explored. Enough work has been done on part of them to show that there are probably considerably more than 100,000,00 tons of merchantable ore on these lands. All this is under lease to large operating concerns. Additional exploration will probably show a larger tonnage. Mining on these lands has never been commensurate with their value on account of the difference between state leases and those issued by private land owners. The latter demand royalties of from 25 cents a ton up, the average being slightly in excess of that, while the state charges 25 cents on all ore. But the chief difference is in the required output. Private owners demand a minimum of from 50,000 to 100,000 tons for each 160 acres or fraction thereof, while the state never asks more than 5,000 tons, and not that until a contract has been in force five years after a railroad has been within a mile of the land. For the first year the state issues exploring lease for $25; this lease expires at the end of twelve months without notice, but can be changed at any time prior to expiration to a 50-year contract. On this $100 a year must be paid unless the ore mined at 25 cents royalty exceeds that sum. The state maintains an inspector who notes all shipments and inspects all properties from time to time.

The state owns probable productive mining lands all the way from the Mississippi river, in T 55 R 25, to T 59 R 14, a distance of more than 75 miles; but only in scattering locations. Most of its ore is in townships 58-19 in the Hibbing district. Close to Hibbing it owns the Pool in 30-58-21, the Flynn in 6-57-20, the Carson Lake in 10-57-21, and others in 2 and 12-57-21. In 58-19 it owns the Wanless and Woodbridge in 16, the Wabigon in 17, the Frantz in 21, the Yates in 11 and the Grant in 20. It owns several properties in the vicinity of Mountain Iron and Virginia. At the extreme western end of the Mesabi it owns the Buckeye, in 36-56-25, whose value is problematic, the Mesabi Chief in 23-57-22, an ore deposit leased by the Cleveland-Cliffs Iron Co. in 10-56-23, and several ore bodies tested by the Great Northern road. Many of these tracts are not thoroughly explored, some scarcely at all, and the total amount of ore to be taken from them is now impossible to determine.

All these lands are the property of either the public school fund or of the state institutions fund, covering the state university and schools for correction. The annual payments, either for leases and contracts or for ore and minimums, is required to be set apart and become a portion of the invested funds of these institutions, interest on which alone is distributed year by year. The public school fund now has invested about $14,000,000 and the university about $1,550,000. It is entirely probable that in time these funds may reach a total far above $50,000,000, and chiefly from royalties from mines on the Mesabi range. The state also owns lands up on the Vermillion, and in the new district in Aitkin county explorations are under way, but neither of these is very well assured yet.

Two Harbors ore shipments for July will be between 650,000 and 700,000 tons. The Duluth, Missabe & Northern road will ship about 1,000,000 tons for the month.

United States Steel Corporation officials at Duluth have organized the Braddock, Duquesne, Homestead and Allegheny iron companies at Duluth, with $50,000 capital each, to hold ore lands in Minnesota.

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The Climax Mfg. Co., Corry, Pa., has been re-organized with a capital stock of $200,000. The officers are: Lewis Olds, president; C. W. Battles, vice president; W. C. Kibler, secretary, and C. F. Webster, treasurer. The company will continue to manufacture the Climax engine for logging purposes.

## DOMINION IRON & STEEL CO.'S VICISSITUDES.

From the recently published work on "Canada's Resources and Possibilities," written for the British Iron Trade Association by its secretary, J. Stephen Jeans, we take the following interesting story of the Dominion Iron & Steel Co.:

### General Conditions.

Among the many enterprises that have been projected and carried to a more or less successful conclusion, with a view to the development of the resources of the Dominion, probably none was started with a greater flourish of trumpets or a fairer promise of success on a large scale than that of the Dominion Iron & Steel Co. The face value of the enterprise was entirely phenomenal. It was projected to manufacture iron and steel for home consumption and for export on a larger scale than any similar enterprise in the history of the Dominion. It was almost promised that it would be able to produce pig iron more cheaply than any other concern of its kind in the world. The works are on tide water, nearer to the markets of Europe than any other on the American continent. The company had very special advantages granted to it of both a federal and a local character, in the form of exemption from taxation, bounties on production and export, and large and valuable land areas, which, computed to be originally worth $80,000, are now believed to be of the value of three or four times that amount. Coal was cheaply worked within ten or fifteen miles of the works, and was available at a low price. Iron ore was to be imported from Newfoundland at a remarkably low cost, alike for mining and for transport. In a word, it seemed as if the Dominion company were about to have the iron trade of the world at their feet, and this might possibly have happened had the original estimates of the cost of production been realized, for in such case Dominion pig iron could have been landed at European ports at about 28s. per ton (including bounty), which is a figure believed to be impossible to any other iron-producing center in the world. The estimates on which this low cost was founded were virtually the following:

| Iron Ores | Coke | Limestone | Labor | Other charges | | Total cost |
|---|---|---|---|---|---|---|
| s. d | s. d. | s. d. | s. d. | s. d. | | s. d. |
| 11 0 | 7 0 | 1 3 | 2 0 | 2 0 | = | 23 3 |

On the assumption that this was to be the cost of producing pig iron, the promoters went to work to spend capital on a lavish scale, and the capitalization of the company's properties has been greater per unit of output than that of any other kindred enterprise with which I am acquainted. The directorate embraced almost entirely men who admittedly knew little or nothing of the business. Plans were adopted from time to time, and partly put into execution, only to be altered or cancelled after much money had been expended upon them. The first general manager soon quitted the company's service, and a new manager had to more or less reconstruct all the original arrangements. A rail mill was ordered and partly erected, but was discarded before being put in operation in favor of another mill of more general adaptabilities, which, when I was at the works, had not yet been got to work. The company's mines in Newfoundland did not turn out so well as was anticipated, although they had cost infinitely more than the price at which they could have been acquired only a short time before they were purchased. [The mines were purchased by the Nova Scotia Coal & Iron Co. for $120,000 and a four-fifths interest was soon afterwards assigned to the Dominion Co. for $800,000.] The question of coal supplies has been a constant source of trouble. The company built a "washery," which was burnt down at an early stage of its career, and up to the time of my visit had not been rebuilt. In some directions the outlay of capital appears to have been very prodigal—as, for example, in the erection of palatial offices and vast piers; in building high walls round the pig beds and the heating stoves, so as to entirely enclose them, and in other directions. The deluge of exports to Europe which was originally threatened almost ended in a fizzle—not more than 55,000 tons having been exported in any one year. And, finally, the pig iron which was to have been produced for under 25s. per ton, has not yet been produced, counting all costs, for less than 40s.

The Canadian *Mining Review* of September, 1903, states that it has been admitted by the parties concerned that "the

whole works could be reproduced for two-thirds of what they have cost. . . . There has been a waste of at least $7,000,000 to $8,000,000. . . . Experts have worked under the control of a board which did not include one director having a practical acquaintance with the business which he undertook to direct. "Many protests reached the ears of the directors, but were disregarded, and now that disaster and almost disgrace has overtaken one of the most promising concerns ever launched in Canada, one cannot altogether acquit the board of directors of responsibility in the matter. In addition to the failure of the chief executive body properly to control and direct the expert knowledge which was at their disposal, they incidentally failed to ascertain in the earlier stages of their history just what class of steel could be made from their ore, which accounts for a change of program, the abandonment of some mills, and the purchase of others. It has always been manifest that the company did not possess a Bessemer ore, and it is well that they are now directing their attention exclusively to the production of a different class of steel."

The Dominion Co. was incorporated in 1899, and soon after began construction work at Sydney on a site of about 800 acres. The works now include, in general, a plant of four blast furnaces (85 feet high and 20 feet diameter at the bosh); ten 50-ton open-hearth furnaces (estimated capacity of output 1,400 tons per day); a 35-inch blooming mill and pit furnaces; 400 Otto-Hoffman coke ovens (capacity 1,600 tons per day); coal washing and sulphuric acid plants, and essential by-product plants; machine shop and foundry. Ore is chiefly obtained from the company's Wabana mine (Belle Island), Newfoundland; limestone from Marble Mountain Iron Co.; dolomite from George River and New Campbelleton; and coal from the Dominion Coal Co.'s mines in the Sydney coal field. The output for the year 1902 was: Coke, 338,230 tons; pig iron, 191,259 tons; steel billets and slabs, 86,424 tons.

There have been few companies whose stocks have been more the sport of stock exchange speculations than those of the Dominion Steel Co. In 1899 the common stock of this company sold at $15, and the bonds, when put on the market, were sold at 90. In 1900 the preferred stock was offered at 85—8 millions of 7 percent cumulative. At a later date this 85 stock went up to 102, and the common stock rose to 79¾, to be followed within a few months by a drop to 8¾. The Dominion company is capitalized at $33,000,000, of which $18,000,000 are paid up. Besides this, the company was presented by the town of Sydney with 485 acres of land, for which the town of Sydney, acting through its corporation, is said to have paid $85,000, extending for nearly a couple of miles along the front of the harbor. For all this the Dominion Steel Co. has to show the following properties:

1. Four-fifths interest in the Wabana iron mines in Newfoundland, purchased at a cost of $800,000.
2. Limestone quarries in Marble Mountain, Cape Breton.
3. An investment of $2,000,000 in the properties of the Dominion Coal Co.
4. Four modern blast furnaces, with accessories, stores, etc.
5. A steel-melting plant of ten 50-ton open-hearth furnaces, with Wellman charging machine, etc.
6. A rolling mill said to be capable of rolling 1,500 tons of steel per shift, but only producing about one-half of that quantity.
7. An engineering shop for repairs, etc.
8. A small steel foundry.
9. An office building of large dimensions.
10. A plant of 400 Otto-Hoffman ovens.

### Coal and Coke.

The Dominion Iron & Steel Co. appears to have had its origin in the coal industry of Nova Scotia, which had assumed large dimensions before any iron-making enterprise was thought of. H. M. Whitney, who has been called the Carnegie of Canada, in 1893 embarked in coal mining in Cape Breton. He has stated that between 1893 and 1899 the Dominion Coal Co. had expended between $6,000,000 and $7,000,000 in its Cape Breton county undertakings. The greater part of this money came into the Province from the outside, most of it from the United States. He states the fact that when the coal company took possession the output of the mines was 700,000 tons, while in 1898 it was 1,200,000 tons, and the wages paid increased from $700,000 in 1892 to $1,100,000 in 1898. When the coal company began its operations in 1893 it found itself cramped for markets, and Mr. Whitney has reminded the government of the fact that to make a market for Cape Breton coal he had organized the gas and coke company at Boston, which in 1899 was taking coal at the rate of 700,000 tons a year.

By a contract made some years ago, the steel company had to pay to the coal company 15 cents a ton on all coal mined over 3,500,000 tons in any one year. By a later contract this royalty was reduced to 7½ cents, which of course, effected a saving to the steel company of $75,000 a year on every 1,000,000 tons over the 3,500,000 tons per annum referred to. The new contract relieved the steel company from paying to the coal company about $2,000,000, which they were obliged to do by the original option, in order to discharge all the debts and obligations which the coal company had contracted. The new contract provided that the steel company shall pay all of the coal company's liabilities, but to enable them to do this they acquired all of the coal company's assets, which, when realized, were expected to leave a large surplus, which it was proposed to use to improve the coal company's properties.

### Coking Plant.

Although I did not obtain any specific information as to the financial results of the operating of the coking plant at Sydney, as such, I am quite prepared to believe that this has been the most lucrative part of the company's business, as it certainly is one of the most admirably conceived and laid out. The 400 ovens which comprise this plant are of the usual Otto-Hoffman type. They are built just at the back of the blast furnace plant, and the coke is run on to the blast furnaces by a tramway of narrow gauge. The coal is obtained from the collieries belonging to the Dominion Coal Co., within a few miles of the works. There is a variable demand for the by-products produced in the process of coking. In the original estimates, the coke was to be produced for 6s. 3d. per ton, but that figure has usually been exceeded. Indeed, the coal now supplied to the coke ovens costs 5s. 2d. per ton delivered, and the process of coking it costs from 1s. 3d. to 1s. 6d. per ton of coke. The yield of coke is about 70 percent.

### Iron Ores.

There exists in Nova Scotia very considerable quantities of iron ore, especially in the neighborhood of Pictou, where, according to reports made, both by the late Sir William Dawson and Mr. E. Gilpin, the commissioners of mines for the province, there are large beds of brown hematite and specular ores, analyses of which give from 62 percent to 68 percent of metallic iron, as well as red hematite and spathic ores, which run to 40 percent of iron. Indeed, samples of these ores were shown at the Colonial and Indian Exhibition in London in 1886, and were awarded a medal and diploma. But in the scheme launched by Mr. Whitney, Sydney was chosen as the location, partly because of the existence there of the headquarters of the Dominion Coal Co., partly because of the specially favorable situation presented for shipment, and partly because of the advantages and inducements offered by the municipality and otherwise. The site of the works could not easily be excelled, being situated on tide-water, with sufficient depth to take steamers of almost any size. The enterprise has also great privileges, including that of exemption from taxation for a period of thirty years, and a reduction of 6¼ cents (rather over 3d.) per ton on coal royalties.

There being no suitable known deposits of iron ore in the neighborhood of Sydney, the Dominion Co. turned its attention to the ores of Belle Island, in Conception Bay, Newfoundland, which had just before been acquired by the Nova Scotia Co. at a low price, after having been vainly offered for years to capitalists in England and elsewhere. The Belle Island iron ore mines are two and a half miles from the shore. The two workable beds were originally estimated to contain, over a proved area of 817 acres, about 34,000,000 tons of iron ore. The upper bed is 5 feet thick, and the lower bed about 4½ feet, rising to about 9 feet, overlaid by nearly 2 feet of cover. The cost of mining the ore varies, but much of it can be mined for about 2s. 6d. per ton. The freights

from Belle Island to Sydney, a distance of about 160 miles, range from 2s. to 2s. 6d. per ton. The ore originally ran to 55 percent iron, but it has lately got poorer, and it is now stated to have fallen to under 50 percent.

**Technical Conditions.**

The following statement as to the situation of the Dominion Co.'s works is made by one who knows the facts:

"If the cost of producing pig iron at Sydney is between $10 and $11, it is a great deal more than it ought to be, and considerably higher than Ferrona iron costs when using the same ore, with dearer coal, longer transportation, and a small furnace. If there has been a marked decrease in the value of their Wabana ore, and metallic contents have fallen as low as 43 percent, this is due entirely to the method of mining, and not to any change in the iron contents in the ore body *in situ*—that statement you can depend upon. The lower bed which they purchased, however, did not average 55 percent throughout, although it did average over 50 percent. The falling off of the metallic contents of the ore as shipped to the furnace does not, of itself, involve the necessity of importing large quantities of high grade ore, as stated. As a matter of fact, the Sydney people have never used foreign ore of any kind for the production of basic pig iron for open-hearth purposes; the foreign ore imported was used exclusively for two purposes—in one case to mix with Wabana to gain a lower phosphoric iron for foundry purposes, and in the other case as a reducing agent in the open-hearth furnaces.

"The Sydney works, in their open-hearth furnaces, are making today, and have been for months, from Wabana ore entirely, without any admixture of other materials whatever, billets which are filling the most exacting requirements for locomotive material, such as driving axles for the Baldwin Locomotive Co., of Philadelphia, the physical and chemical specifications for which are much more severe than are called for in any steel rails made either in the United States, Great Britain, or elsewhere. All this is said in regard to their inability to make steel rails of the necessary quality from Wabana ore, pure and simple, is nonsense. Briefly, what I say is, that there has been no deterioration in the ore *in situ*, and that from this ore alone, without any other material whatever, steel of the very highest grade has been, and can be, made."

**Iron and Steel Works at Sydney.**

In October, 1903, I was afforded the opportunity of going over the works at Sydney of the Dominion Iron & Steel Co. They have a very fine location. With a frontage of over a mile to Sydney harbor, which is one of the best harbors in the Dominion, they enjoy transportation conditions that it would be difficult to excel. The arrangement of the various plants is also good. They were designed by Julian Kennedy, of Pittsburg. There is not, however, much to be said about them that would be of real interest, because when I was there they were in a transition state, having only one mill employed and two others in course of construction. The blast furnaces, four in number, are quite the largest in Canada, and they are, speaking generally, on American lines. The heating stoves are of the modified Cowper type. The furnaces are estimated to be equal to 300 tons per day, but in 1902 they only produced 191,259 tons, which averages about 120 tons per day, assuming the four furnaces were in blast all the time. This was not exactly the case. At the time of my visit, only two furnaces were in blast. The arrangements made for conveying the molten iron to the open-hearth steel furnaces, and the steel ingots from the melting plant to the mills, are of the usual American description, and appear to be satisfactory enough, but the engine power provided is not equal to the necessities of either the blast furnaces or the mill plant. The new mills will, however, have increased engine power. The open-hearth furnaces are a really fine plant, and have a capacity larger than that of any other Canadian plant. The company has its own pier, which allows of loading several steamers at a time.

**The Outlook.**

Probably it will not be deemed that I have devoted too much attention to the plants and operations of the Dominion Co., in view of the fears that its establishment appears to have excited in Europe, and not least so in our own country. Three years ago, the threat that a plant of this kind, located on the nearest available land for an European trade, was able to produce pig iron for 25s. and steel blooms for 47s. per ton, [Address by Mr. Moxham, the general manager, before the Toronto Board of Trade.] and was to have these figures further reduced by the payment of federal bonuses to the extent of 8s. 4d. to 12s. 6d. per ton, seemed like holding a suspended sword over the iron trade of the mother country. For a time there was undoubtedly a good deal of apprehension that a new enemy—or at any rate a new rival—had arisen that was not to be lightly esteemed. This impression was accentuated by the fact that cargo after cargo of Dominion pig iron was landed in this country and sold at a price that seemed to leave a profit. But now that it is known that the cost of making this iron is nearly double what was originally estimated, and that the Dominion works are far from having realized the promises made on their promotion, the British iron trade probably breathes more freely.

It is quite possible that the Dominion Co. may find quite enough to do in the supply of the wants of Canada itself. Those wants are increasing very rapidly. The average imports of the country for the five years ended 1889 were 271,744 tons annually. Mr. Drummond, of Montreal, himself a prominent ironmaster, recently stated that the consumption of today is over 800,000 tons a year. It is estimated that within the next five or six years even this output may be doubled, or nearly so. The exact extent of the development of the future must be more or less matter of conjecture, but that the progress will be large and important hardly admits of a doubt. In any case, it will be some time yet before the Dominion Co. can export either semi-products or finished steel. When their steel plants are in full swing, the company will not have much iron to spare for export with their existing plant, which only allows of three furnaces being regularly in blast.

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In a recent folder on alumino-thermics the Goldschmidt Thermit Co., 43 Exchange place, New York, gives a nutshell statement of what the alumino-thermic process is designed to do, and the lines in which it has been employed with success. Illustrations are given of a complete outfit for rail welding and of a stern-post on a Hamburg-American liner, the collar of which, 20 x 8 inches, was welded by the use of thermit, 750 pounds being employed in one reaction. In 1902 2,600 trolley rail joints were welded by thermit, and in 1903, 20,000 joints. The characteristics of thermit and its performance are stated, chief of which are that it creates a temperature of about 5,400 degrees Fahr. in a half minute, and that it gives half its weight in the form of superheated liquid steel with 0.1 carbon.

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The Bessemer department and rolling mills of the National Tube Co., at Lorain, O., were closed down July 23. It is stated that the suspension is due to lack of orders, and that while the management cannot hold out the hope that operation will be suspended less than three weeks, it is confident that it will not be longer than that. The blast furnaces will continue as heretofore. Many of the employes thrown out of their usual employment will be given work in the construction of the new tube mills.

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Dodge & Day, of Philadelphia, have just completed the installation of the 340-h. p. Buckeye vertical, cross-compound engine, direct connected to two general electric 100-k. w. continuous current, compound-wound generators for the Link-Belt Engineering Co. The same concern is at work on a three-motor, electrically-operated locomotive crane for this company, to handle beams, angle irons and other heavy structural material for use in a new storage yard.

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According to a paper by Dr. Wurt in *Stahl und Eisen*, pig iron suitable for the production of malleable castings should contain less than 3 percent of carbon, less than 1.20 percent of silicon, less than 0.40 percent of manganese, less than 0.10 percent of phosphorus, and less than 0.05 percent of S.

## STEEL IN OFFICE EQUIPMENT.

The replacement of wood by steel is a progressive movement, and is spreading from the field of construction to diverse lines, each of which has one or more pioneer manufacturers. The innovations seem radical at the outset, and the manufacturer's problem is that of creating as well as filling the want. In the application of steel to the manufacture of furniture, particularly office specialties, the Berger Mfg. Co., of Canton, O., has been active, both in the invention and the introduction of its products. With the development of greater system and the employment of ready reference methods in business, the encasement of records has suggested the manufacture of steel filing appliances, an example of which is shown in the illustration. This is a later development in the movement which began with metal ceilings and side walls, and then included

SECTIONAL OFFICE CABINET BUILT OF STEEL.

all office furniture, and in the case of mercantile establishments substituted metal for wood counters, shelving and cases, carrying out the idea of making so-called fireproof buildings fireproof as to contents as well as structure.

The sectional cabinet of the Berger Mfg. Co. consists of document files, card index drawers, letter files and roller shelves, with slip draw and top and bottom sections, all made of steel. The cabinet is 81½ in. high, 40¾ in. wide and 14½ in. deep. It is manufactured in maroon or olive green, striped in gold. Its adaptation is chiefly to railroad and professional offices and to the uses of manufacturers and business men who require a compact arrangement of office appliances.

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By a reduction of its clerical force, the American Seeding Machine Co., with headquarters at Springfield, O, has effected a saving in expenses of $60,000 a year.

# INDUSTRIAL SUMMARY.

**[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]**

**New Buyers in the Market and Some of Their Wants:—**

The Interstate Steel Co., Rockford, Ill., has been incorporated with a capital of $65,000. Incorporators are: H. C. Shattuck, A. R. Morgan and C. W. White.

The Shaker Steel Co., Elbridge, Onondaga Co., N. Y., has been incorporated with a capital of $100,000. Directors are: Monroe C. Smith, H. W. Smith and F. E. Wade, of Syracuse.

The National Wire Cloth Co., Niles, Mich., has been incorporated with a capital of $50,000 to manufacture wire, wire cloth, screws, and all kinds of wire goods. The incorporators are: F. A. Hastings, C. K. Anderson and A. E. Dennis, all of Chicago.

In carrying out its plans for the sanitation of the Panama Canal Zone, the Isthmian Canal Commission will soon advertise for bids for 100,000 yards of wire netting with which to screen the various buildings along the line of the canal so as to protect the officials and employes from the mosquitoes which carry yellow and malarial fever. Governor Davis, of the Canal Zone, has recommended the use of galvanized steel, brass or copper wire.

The Gill Gas Engine & Machine Co., Portland, Ore., has been incorporated with a capital of $15,000, to manufacture gas engines, etc. Incorporators are: W. A. Gill, A. J. Gill and F. H. Irwin.

The H. C. Fox & Son Co., Harrisburg, Pa., has been incorporated with a capital of $30,000.

At a meeting of the stockholders of the Wheeling Roofing & Cornice Co., Wheeling, W. Va., held last week the capital was increased from $200,000 to $1,000,000. All of the officers and directors were re-elected. The increased capital is to be used in the erection of additional manufacturing capacity.

The National Scale Co. has been organized at Beaver Falls, Pa., for the purpose of manufacturing scales of all kinds. The capital will be $125,000. The incorporators are Jacob Hauser John Reeves, John Ohnsman, J. M. May, John T. Reeves and and H. W. Reeves.

The Meyersdale Sheet Steel Co., Meyersdale, Pa., has organized with the election of the following officers: C. W. Truxall, president; A. F. Baumgarten, vice president; E. M. Beachley, secretary; E. R. Floto, treasurer; T. J. Costello, general manager. The company has purchased two sheet mills from the Huntington, W. Va., sheet and planished plate company, and will remove them to Meyersdale. Capital, $50,000.

The Dover Forge & Iron Co., Canal Dover, O., has been incorporated with a capital of $100,000. Incorporators are: Ambrose Beard, Joseph A. Krantz, Arthur J. Krantz, Charles F. Baker and Fred Bernard, Sr.

The Ford Electric & Mfg. Co., St. Louis, Mo., has been incorporated with a capital of $15,000, to manufacture and repair machinery, tools, etc. Incorporators are: Ethelbert T. Ford, William F. Ryan, of St. Louis, and Charles Suber, of Webster Groves, Mo.

The Foyer Steel Stamping Co., Painesville, O., has been incorporated with a capital of $20,000. Incorporators are: Albert Foyer, E. H. Joseph, E. J. Thobaben, J. Vining and A. R. Callow.

The Illinois Foundry & Machine Co. has been organized at Granite City, Ill., with a capital of $50,000. E. M. Miller, of Edwardsville, Ill., will be president and general manager; A. J. Miller, of St. Louis, will be vice president, and Arthur W. Price, of Edwardsville, secretary and treasurer.

The German American Foundry Co., Boonton, N. J., has has been incorporated to manufacture castings and machinery. Capital, $25,000. Incorporatrs: Henry Krueger, Jas. S. Cunningham and Oscar Rohland, all of Boonton.

The Bloomington Bracket Co. has been incorporated at Bloomington, Ill., to manufacture the "Perfection Window Bracket," a safety device of metal and wood. The company's plant will be located in that city. The incorporators are C. C. Bowen and P. J. Collins.

The American Shading Machine Co., Buffalo, N. Y., has been incorporated, capitalized at $18,000, for the manufacture of shading machines and other mechanical devices and novel-

ties. The incorporators are: Wm. E. Pengeot, Joseph A. Sauter and Josephine Sauter.

The Pepple Brake Co., Hillsboro, Tex., has been incorporated with a capital of $5,000, to manufacture and sell a patent brake for railroad cars and engines. Incorporators are: J. W. Pepple, S. L. Werden, T. Miller, B. D. Smith, Wiley M. Fain, S. F. McMillan, T. P. O'Rourke and O. J. Schneider.

The Anthracite Machine Works, Minersville, Pa., have been incorporated with a capital of $50,000, divided into 1,000 shares with a par value of $50 each. Ninety-six shares of the company's stock have already been subscribed for as follows: G. Fred Dietz, Minersville, 30; Charles A. Gildemeyer, Philadelphia, 20; Wilbur Woolcock, Pottsville, 16; Walter Richards, Philadelphia, 15; Alexander H. Scott, Minersville, 10; George Snyder, Minersville, 5; Oscar Scott, Riverton, N. J., 1.

The American Machinery Co. Minneapolis, Minn., has been incorporated with a capital of $25,000. The company will manufacture laundry machinery. Incorporators are: Walter C. Cunningham, Frank E. Dickinson, N. L. Cunningham and M. J. Dickinson.

The Pacific Bridge Co., San Francisco, Cal., has been incorporated with a capital of $100,000. C. F. Swigert, Portland, is attorney-in-fact.

The Chicago Rotary Engine Co., Chicago, has been incorporated with a capital of $100,000, to manufacture engines. Incorporators are: W. O. Taylor, W. H. Johnson and R. W. Miller.

The Kahen Steel Co. has been incorporated with a capital of $100,000. The directors are: Monroe C. Smith, H. W. Smith and F. E. Wade, of Syracuse. The plant will be located in Syracuse, N. Y. The exact location has not been announced. The principal product will be a steel box for holding caskets to take the place of the hardwood rough boxes which are now used for that purpose.

**Fires and Accidents:—**

A disastrous fire visited the town of Fresno, Cal., July 11, destroying a number of manufacturing plants, including the Valley Foundry & Machine Shops.

The machine shop of the Winder Foundry & Machine Works, of Winder, Ga., was destroyed by a high wind storm on July 16.

A fire of unknown origin on July 18 destroyed the plant of the Indianapolis Drop Forging Co., Indianapolis, Ind., causing a loss of about $25,000, covered by insurance.

Fire on the night of July 18 in the plant of A. L. Hayes & Co., stove manufacturers, Nashville, Tenn., resulted in damage estimated at $25,000, covered by insurance.

**New Construction:—**

The Autocar Co., Ardmore, Pa., will build a machine shop 44 x 200 feet.

The Diamond Boiler Works, Minneapolis, Minn., recently incorporated with a capital of $50,000, has purchased the old Diamond Boiler plant, to which additions will be made.

Work will soon be begun on the new plant of the Globe Iron Works, at Menominee, Wis. The building will be as follows: Main shop, 50 x 180 ft.; foundry, 56 x 65 ft.; pattern shop, 32 x 40 ft.; shipping and stock room, 54 x 72 ft.; boiler house, 48 x 52 ft.; and office, 30 x 40 ft.

The Nagle Engine & Boiler Works, Erie, Pa., will build an addition 120 x 250 ft., which will be used as a foundry.

The plant of the Woodcock Foundry Co., Chillicothe, O., has been purchased by the Logan Motor Carriage Co. of that city, which recently increased its capital stock to $100,000. The plant will be remodeled and new machinery installed.

The Midland Mfg. Co., Tarkio, Mo., is erecting three new buildings 40 x 168 ft., 40 x 100 ft., and 40 x 60 ft., respectively, which will double the capacity of the plant.

The Red Jacket Pump Co., Davenport, Ia., will soon begin the erection of a plant. There will be a foundry 85 x 250 ft. and a large machine shop. It is probable that the old plant of the company will not be abandoned. It will be used for a time at least in connection with the new plant.

The contract for the construction of the plant in Mexico City, Mexico, to be operated by the Mexican Car & Foundry Co., has been awarded to John Hooper, of that city. Considerable steel will be used in the building. The contract calls for the following: Erecting shop, 350 x 50 ft.; blacksmith shop, 200 x 80 ft.; machine shop, 200 x 80 ft.; woodworking shop, 255 x 80 ft.; foundry, 200 x 80 ft.; axle, wheel and truck shop, 65 x 80 ft.; store, 80 x 50 ft.; templet and pattern shop, 100 x 55 ft. The company was formed about a year ago to manufacture cars. The equipment of the plant will cost $75,000.

Extensive improvements will be made in the shops of the Denver & Rio Grande railway and the Denver, Pueblo & Salt Lake City. The shops at Denver will be remodeled and considerable new machinery will be installed.

The contract for building the Ensign foundry at Auburndale, O., has been awarded to Frank Stahl and the work will be commenced at once.

The Buckwalter Stove Co., of Pottstown, Pa., has recently completed an addition to its plant, which is said to have one of the finest molding rooms in that section. It is equipped with modern appliances throughout.

Field, Hinchman & Smith, engineers and architects, have let the contracts for the new pattern shop and blacksmith shop for the Olds Motor Works, of Lansing, Mich.

Work will be begun in a few days on the plant of the American Wire Cloth Co. at Clinton, Ia. A two story structure will be erected at a cost of about $25,000.

Charles J. Hughes Jr., attorney for the Frontier Coal & Steel Co., Denver, controlled by David H. Moffat, of the Denver, Northwestern & Pacific railroad, announces that the plans of the company which have been held in abeyance for more than a year will now be carried out, and that a steel and iron works will be erected within a few miles of Denver. Mr. Hughes states that the reason for the delay in starting the new construction was that the railroad over which the raw materials for the plants are to be taken has not been finished, but it is now nearing completion. Coal and iron ore are to be brought from Utah.

Work has been begun on the plant of the Inter-State Steel Co., recently incorporated at Rockford, Ill., with a capital of $65,000. The first building will be 100 x 64 ft.

The American Suction Gas Producer Co., Lansing, Mich., will, within 30 days, commence the erection of a plant. The company will manufacture apparatus for the generation of gas for use in gas engines.

The plant which the Preble Machine Works will build at South Chicago will consist of several large buildings, the principal one of which will be 225 x 90 ft. The total cost will be $75,000. Considerable new machinery will be installed.

The Meade Roofing & Cornice Co., Philadelphia, has just completed its new plant. All machinery, electric motors and tools required at present have been purchased.

**General Industrial Notes:—**

The Strube Machine Works, Chicago, recently incorporated, succeeds the private business of Herman Strube, who has been located at Twenty-fifth street and Stewart avenue for more than 14 years. The officers of the new company are: Herman Strube, president; Charles Knoerber, vice president and general manager; and William Strube, secretary and treasurer.

As a safeguard against the destruction of battle ships and cruisers being set on fire, the navy department has decided to furnish all its ships in the future with steel furniture. During the Spanish war damage was done to several ships on account of the furniture catching fire.

The plant and machinery of the Florence Machine Shops, Florence, Ala., have been sold to George L. Hexie and Allen H. Kells, of Adrian, Mich., and as soon as the necessary arrangements can be made the plant will be converted into a manufactory of clay working machinery, friction clutches and other machines. The purchasers expect to have the plant in operation by Aug. 1.

The Lookout Mountain Iron Co., which is building a blast furnace at Battelle, Ala., expects to have it in blast early in August.

Manning, Maxwell & Moore have secured a large order, amounting to between $150,000 and $160,000 worth of tools from the Illinois Central railroad, to be shipped to the various shops along their lines. The order consists of a full line of railroad tools, such as driving wheel lathes, axle lathes, car wheel borers, steam hammers, large and small engine lathes, a very large quantity of punching and shearing machinery; also, woodworking tools, radial drills, shapers, bolt cutters,

brass lathes, grinding machinery, planers, steel tired wheel lathes, slotting machines, vertical and horizontal boring machines, centering machines, a full line of tool room tools and milling machines. This order was secured after the severest kind of competition. The firm also secured the order for all the electric traveling cranes required.

The C. D. Pruden Co., of Baltimore, recently incorporated for the manufacture of fire proof doors and architectural sheet metal work, has purchased from the St. Paul Roofing, Cornice & Ornament Co. its Baltimore plant. The following are the directors of the C. D. Pruden Co. for the first year: C. D. Pruden, George Norbury Mackenzie, Graeme Turnbull, John S. Bridges and Frank C. Bolton. Mr. Pruden is president and general manager of the new corporation, Mr. Mackenzie is vice president and treasurer, and Mr. Turnbull is secretary and treasurer.

George P. Anderson, 120 Liberty street, New York, consulting engineer for the San Juan Sugar Corporation, has placed a number of contracts for equipment, among which are the following: The Stirling Co., Barberton, O., boilers, 1,200 h. p.; Logan & Sons, New Orleans, sheet iron work; Birmingham Machine & Foundry Co. a large contract for its specialties.

The Reliable Gas Machine & Mfg. Co., Davenport, Ia., whose plant was recently destroyed by a tornado, is rebuilding and has moved into a part of its temporary quarters, so that it will soon be able to fill all orders promptly.

We are officially advised that the report published by southern newspapers that the United States Cast Iron, Pipe & Foundry Co. expects to resume operations at an early date at its plant at South Pittsburg, Tenn., is not true.

The Warner furnace at Cumberland Furnace, Tenn., will blow out in the next few days. It has a capacity of 100 tons per day.

The blast furnace of the Youngstown Steel Co., Youngstown, O., will resume operations about Aug. 1.

The wire, rod, nail and fence mills of the American Steel & Wire Co., Donora, Pa., started up this week in full. This plant has only been operating on half time in the past two months, but there is now an accummulation of orders.

The light rail mill of the Girard, O., plant of the Carnegie Steel Co., Pittsburg, has been removed and will be added to one of the iron mills of that company in the Pittsburg district. Only the 7, 8 and 10-inch mills now remain at this plant. Operations are suspended.

The coking plant of the Atlas Coke C., Uniontown, Pa., has been sold to W. A. Stone and Isaac Semans. The property was recently abandoned as the coal was worked out. The purchasers own coal acreage adjoining the coking plant and will resume operations shortly.

At the annual meeting of the Sharon Foundry Co., Wheatland, Pa., held last week, Joseph Riddell, president, and Thomas Kennedy, secretary and treasurer, were re-elected.

The Niles, O., plant of the American Sheet & Tin Plate Co. has resumed operations in full.

The plant of the Standard Bolt & Mfg. Co., Alliance, O., will be removed to Ft. Worth, Tex.

At the Hubbard, O., furnaces of Andrews & Hitchcock Iron Co., the boiler capacity is being increased by 1,000 h. p. This is to be further augmented shortly by the addition of 2,000 h. p., replacing some of the present boilers.

The S. G. Taylor Chain Co., Chicago, has purchased the plant of the United States Chain Co. at Maxwell, Ind., and also the business of the S. G. Taylor & Son, Inc., 96-100 E. Indiana street, Chicago. The United States plant will manufacture all kinds of machine made chains, while the S. G. Taylor & Son plant will continue to manufacture its high grade hand welded chains for dredge and steam shovel work. It is expected that by the consolidation of these two plants, business will be materially increased.

The number of employes of the American Locomotive Works, Paterson, N. J., where in busy times 1,800 men are at work, has been reduced to less than 200. Many of the employes have gone to work in the Canadian plant of the company.

The common pleas court at Marion, Ind., has confirmed the bid of G. S. Rineholt for the purchase of the Matthews Steel Casting plant at Matthews, Ind., the bid having been submitted by the receiver several days ago. P. A. Hughes, Herman Bantly, H. M. Lowman and J. N. McKee are associated with Mr. Rineholt and expect to soon have the plant in operation.

The Petroleum Iron Works Co., Washington, Pa., will move its plant to Arden Station, near Washington, where it has purchased a plot of 17 acres. The company's plant has been crowded with work to such an extent that removal has become necessary. The business was established in 1892, when the company purchased the Thomas Morrison Foundry. A new location was obtained in 1894, but such rapid progress has been made that the plant is not large enough to meet the demands. The company will not be in the market for machinery for at least six months.

The Republic Iron & Steel Co., Youngstown, O., is increasing its bar capacity at its Valley plant very materially. A tract of six acres is being utilized for this purpose.

The Bessemer plant of the Carnegie Steel Co., Youngstown, O., was shut down this week for repairs. The two stacks, however, continue in operation. If repairs can be completed in time the steel plant will resume next week.

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Contracts are now being placed for the equipment of the great power stations to be located at the terminals of the Pennsylvania railroad tunnel system at New York. The contracts for 32 boilers have been placed with Babcock & Wilcox Co., and the contract for the economizers to be used in connection with these boilers has been awarded to the Green Fuel Economizer Co. Specifications have also been issued for the electric traveling cranes and competitive designs are being prepared by the manufacturers of coal handling machinery, to cover this part of the equipment.

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In a suit filed in the Supreme Court of the District of Columbia by the citizens of Eckington, a suburb of the national capital, an injunction is sought to prevent the operation of the structural iron works of Barber & Ross. An extended description is given of how the quiet loving peple of Eckington are disturbed by the noise of the iron works. The operations are designated "an intolerable private nuisance," and " the resounding crash and rattle of heavy machines," and "the heavy thunderous rumble of machinery." It is claimed that the homes of the complainants are rendered "greatly uncomfortable to them and their families, and the peaceful and quiet enjoyment thereof completely destroyed." It is asserted that the structural iron works are equipped with a complete electric lighting plant "for the purpose of continuing its noisy operations throughout the night," the din of which, it is asserted, would make it "physically impossible for persons of ordinary and normal nerves to obtain any refreshing sleep" with a radius of 1,000 feet of the works.

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City Solicitor Butler, of Columbus, O., recently declared that the contract made by that city for the purchase of $400,000 worth of cast iron pipe for water mains from the United States Cast Iron Pipe & Foundry Co. at $28.50 per ton was illegal. It is expected that a new contract will be made later. The city of Columbus last week received bids for cast iron pipe for the construction of the Scioto dam. For this contract James Westwater, of Columbus, bid $28 90 per ton; Camden Iron Works, Philadelphia, $24.20 per ton; and the United States Cast Iron Pipe & Foundry Co., $24.50 per ton. The lower quotations were attributed to the recent decline in the price of pig iron.

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The Adrian Steel Casting Co., Adrian, Mich., recently incorporated with a capital of $30,000, has organized by electing the following officers: President, Charles E. Sutton, Toledo; vice president, Dr. G. B. M. Seager; secretary and general manager, W. N. Swift; treasurer, E. N. Smith. The directors comprise, besides the officers, F. E. Kennedy, E. C. Sword, L. B. Robertson, J. W. Allen, Royal Shacklette and C. G. Wesley, of Adrian, and A. H. Davies, of Cleveland.. The company will use the process invented by A. H. Davies, one of the stockholders.

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The directors of the American Steel Foundries, at their meeting July 22, declared a dividend of one percent on the company's preferred stock, which is one-half of one percent less than that declared three months ago.

**IS YOUR WATER SUPPLY LIMITED?**
**DO YOU HAVE TO PAY FOR IT?**
**DOES IT CONTAIN SCALE FORMING MATTER?**

Then you will probably want to run surface condensing. There is just one way to do this satisfactorily. Take the oil out with a Cochrane Vacuum Oil Separator before the exhaust steam is condensed. The problem of removing oil from exhaust steam, that is afterwards condensed in a surface condenser, is a difficult one, involving as it does, the careful consideration of the quantity of steam to be handled, the drainage, method of installing, etc.; but the satisfactory results that have been obtained, as evidenced by the many installations placed in service during the past ten years, lead us to believe that we have correctly solved the problem by the aid of our Cochrane Vacuum Oil Separators, and that we can solve any similar problem and give satisfactory service.

If you are interested in any type of separators for removing water or oil, or other foreign substance from live or exhaust steam, write for our Catalogue **11-S.**

**HARRISON SAFETY BOILER WORKS, Clearfield & 17th Sts., Philadelphia, Pa.**

**Manufacturers of Cochrane Feed Water Heaters, Cochrane Steam and Oil Separators and the Sorge-Cochrane Systems.**

# *This Illustration*

shows our Cleveland Angle Shear No. 6 driven by motor.

This machine is designed to shear angles either square or at any bevel up to 60 degrees.

It is mounted on turn table so that it may be swivelled in any direction to facilitate the operation of shearing long angles.

Built in 5 sizes.

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**CARRIAGE BOLTS**

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BLACK EAGLE
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The perfection of this type of Bolt. Each the best of its class. Absolutely interchangeable.

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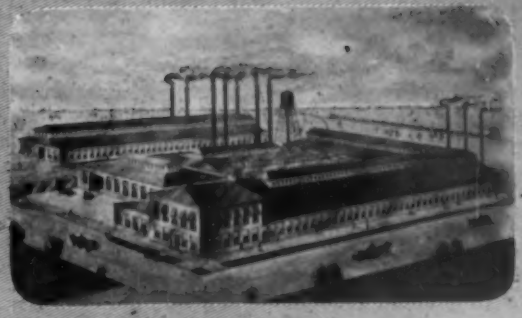
**For Blanking Stamping and Drawing. In Coils or Cut to Lengths.**



**STRIP STEEL**

**All Widths Gauges and Tempers. Prompt Deliveries.**

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***GENERAL SALES OFFICES:***
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***DISTRICT SALES OFFICES:***

| | |
|---|---|
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| BOSTON: | Telephone Building |
| BUFFALO: | German Insurance Building |
| CHICAGO: | The Rookery |
| CINCINNATI: | Union Trust Building |
| CLEVELAND: | Perry-Payne Building |
| DENVER: | 101, 102 Boston Building |
| DETROIT: | Union Trust Building |
| NEW YORK: | Empire Building |
| PHILADELPHIA: | Harrison Building |
| SAN FRANCISCO: | 226 Market Street |
| ST. LOUIS: | New Bank of Commerce Building |
| WASHINGTON: | National Safe Deposit Building |
| ST. PAUL: | Pioneer Press Building |
| NEW ORLEANS: | Hennen Building |

***FOREIGN SALES OFFICES:***

| | |
|---|---|
| CITY OF MEXICO: | 924 Apartado |
| MONTREAL, CANADA: | Bell Telephone Building |
| SIDNEY, N. S. W.: | Mutual Life Bldg,, 14 Martin Place |

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for nails, market, and fine wire
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New Plants installed.
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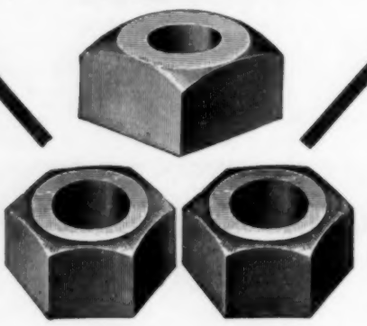

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**Are made of double refined bar iron. They're true to size, and well finished. This ought to interest you, but if not—the price certainly will.**

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